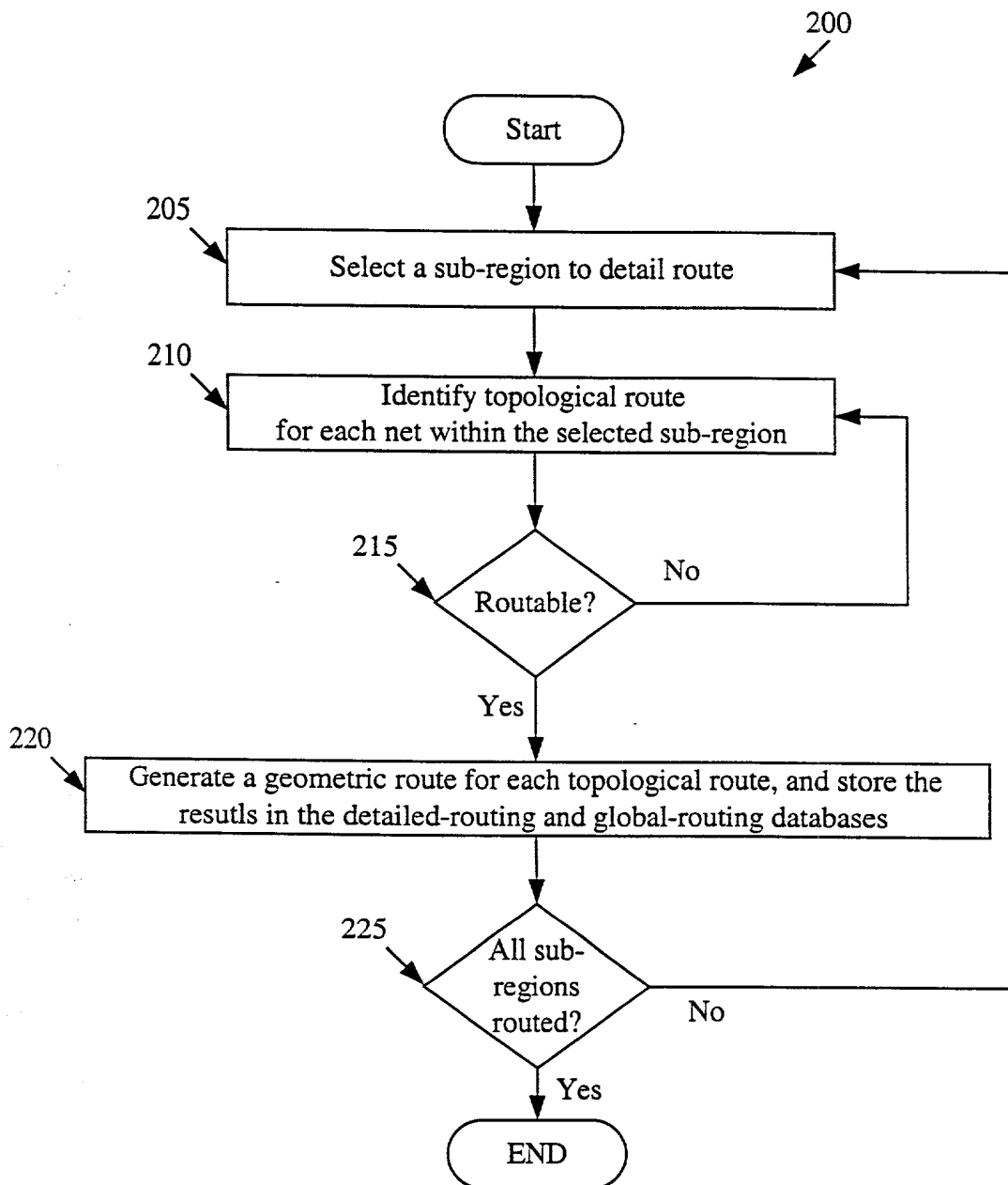


Figure 1



**Figure 2**

2025-09-09

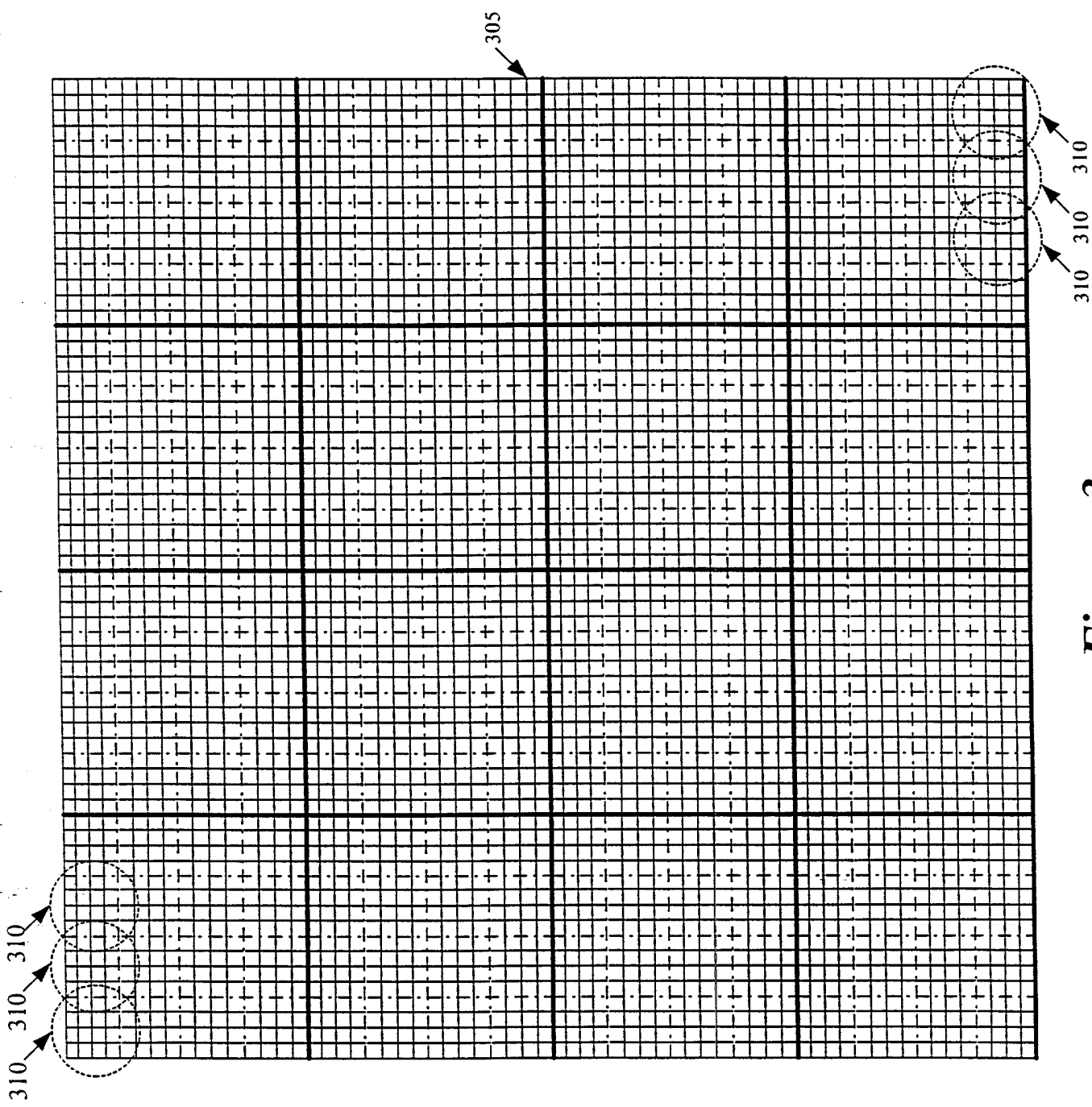


Figure 3

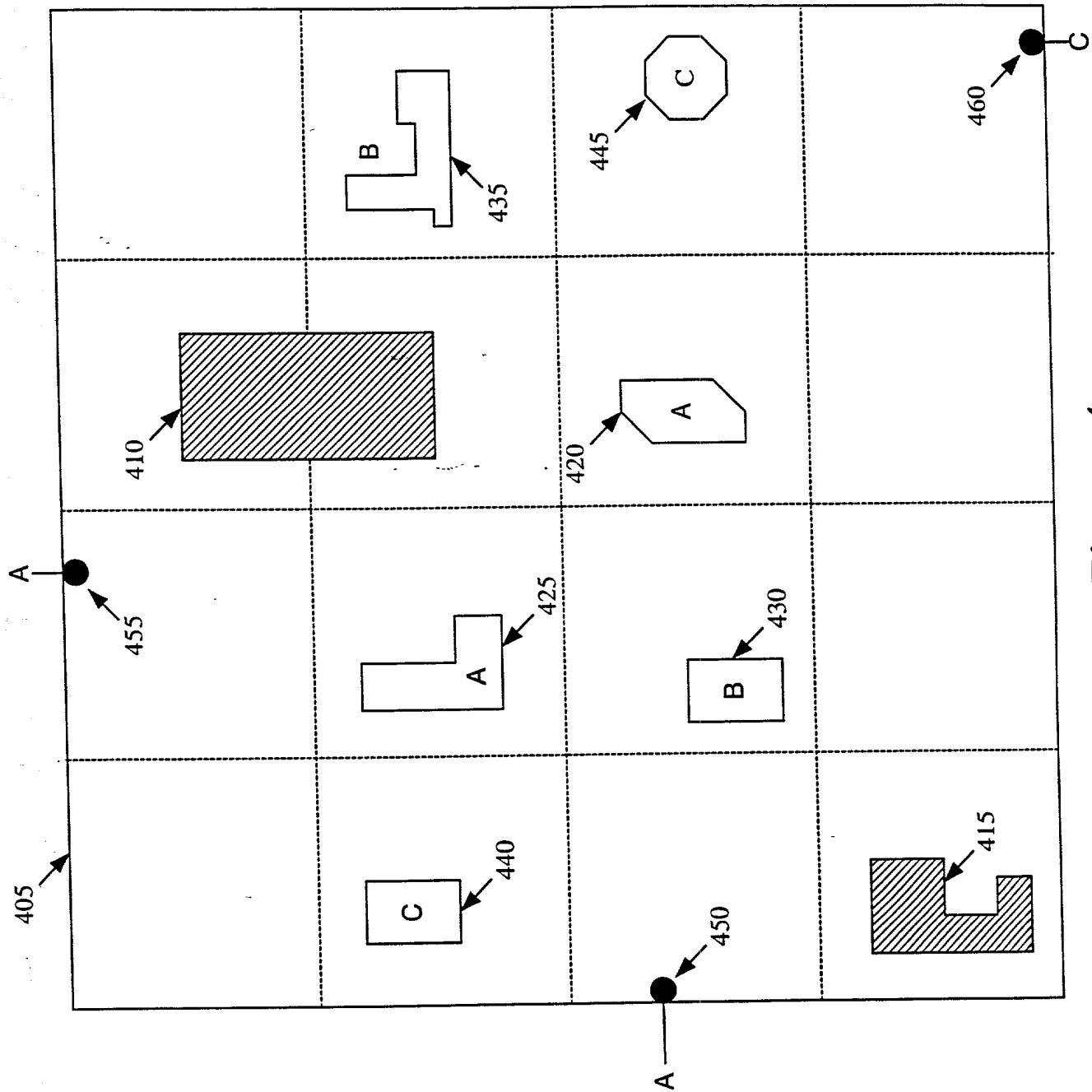


Figure 4

2016-09-09

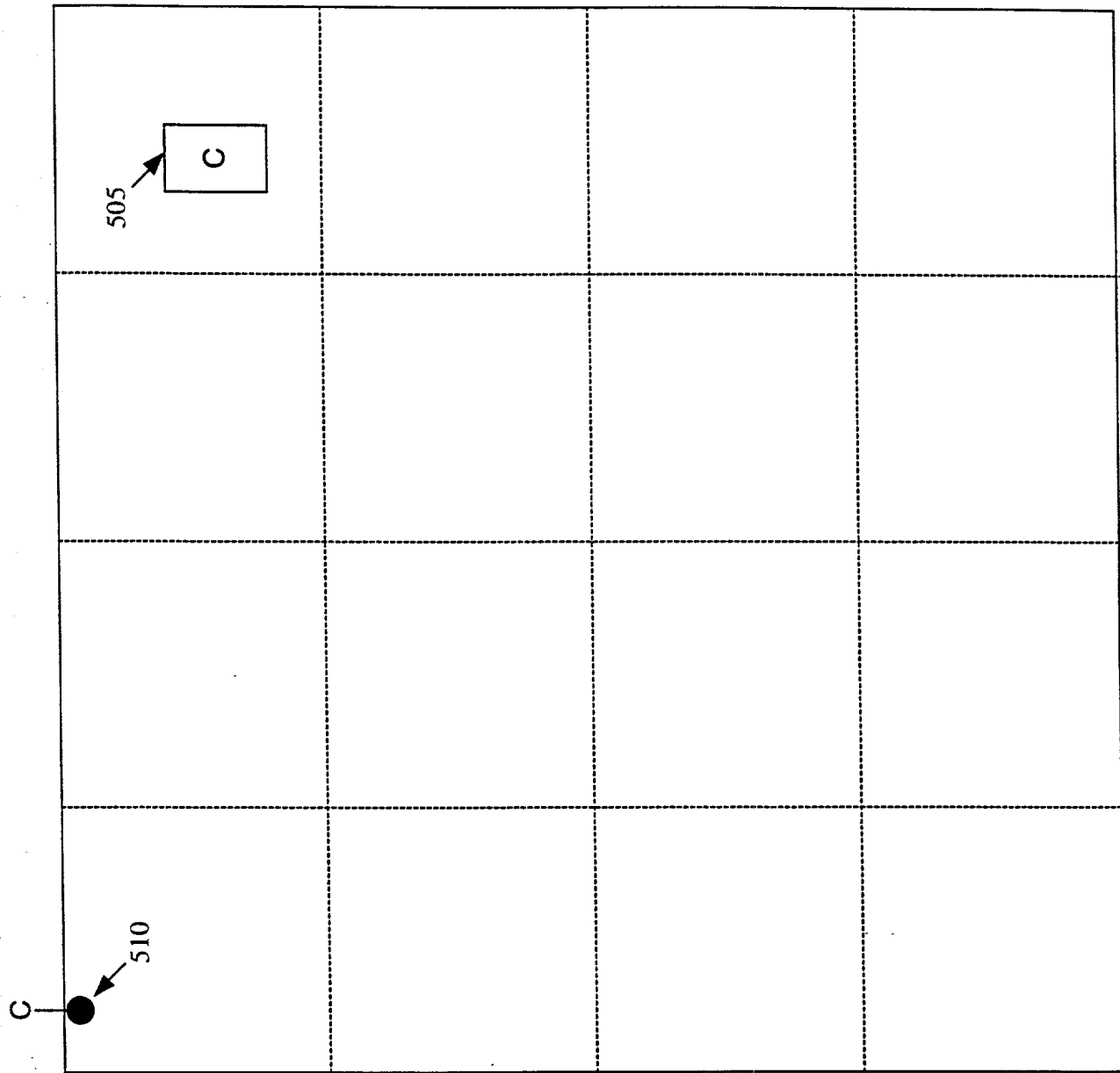


Figure 5

```

-List of Geometries
  --Each Geometry including a sequence of points & layer assignment
-Bounding box of the region
-Array of layer properties
  --Minimum wire size
  --Minimum spacing
  --Via sizes
  --Cost/Unit
-Netlist specifying a number of nets
  --Each net specifying a set of pins
  --Each pin specifying a set of ports
  --Each port specifying a set of geometries

```

*Figure 6*

```

-List of Geometries
  --Each Geometry including a sequence of points & layer assignment
  --List of connection nodes inside each pin geometry
-Bounding box of the region
-Array of layer properties
  --Minimum wire size
  --Minimum spacing
  --Via sizes
  --Cost/Unit
-Netlist specifying a number of nets
  --Each net specifying a set of pins
  --Each pin specifying a set of ports
  --Each port specifying a set of geometries
-For each layer, a graph specifying
  --Nodes
  --Edges
  --Faces

```

*Figure 7*

Face
<ul style="list-style-type: none"><li>-Reference to 3 edges</li><li>-Reference to 3 nodes</li><li>-Up to two references for up to two face item</li></ul>

800

Figure 8

Edge
<ul style="list-style-type: none"><li>-Two references for up to two faces of the edge</li><li>-Capacity</li><li>-Flow</li><li>-Constrained</li><li>-Linked list of items on the edge starting with one of the edge's nodes and ending with its other node</li></ul>

900

Figure 9

Node
<ul style="list-style-type: none"> <li>-Net Identifier</li> <li>-One or more planar-path references to adjacent topological items in the same planar path</li> <li>-A pair of via-path references to up and down topological via items</li> <li>-A references to list of edges connected to the node</li> <li>-For each edge, an edge reference to the next or previous topological item on the edge</li> <li>-A reference to the geometry of the node</li> <li>-Vertex number identifying the vertex of the geometry</li> <li>-Location of the node</li> </ul>

1000

Figure 10

Edge Item
<ul style="list-style-type: none"> <li>-Reference to its edge</li> <li>-Net Identifier</li> <li>-A pair of planar-path references to adjacent topological items in the same planar path</li> <li>-A pair of edge references to the next and previous topological item on the edge</li> </ul>

1100

Figure 11

Face Item
<ul style="list-style-type: none"> <li>-Reference to its face</li> <li>-Net Identifier</li> <li>-Up to 3 planar-path references for adjacent topological items in the same planar path</li> <li>-A pair of via-path references for up and down topological via items</li> <li>-Bounding polygon that defines legal face item locations</li> <li>-Constraining Points and Distances</li> </ul>

1200

Figure 12



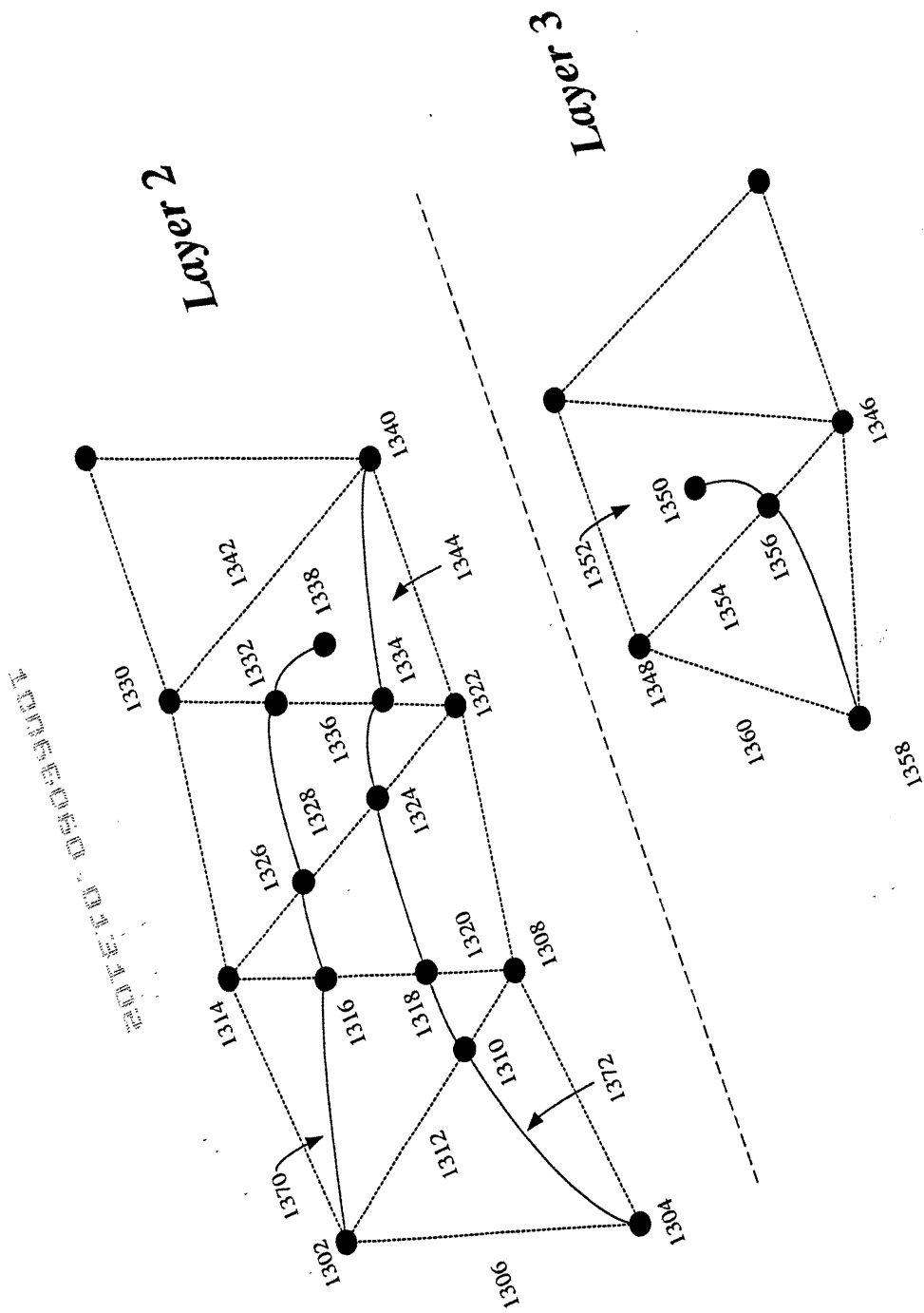
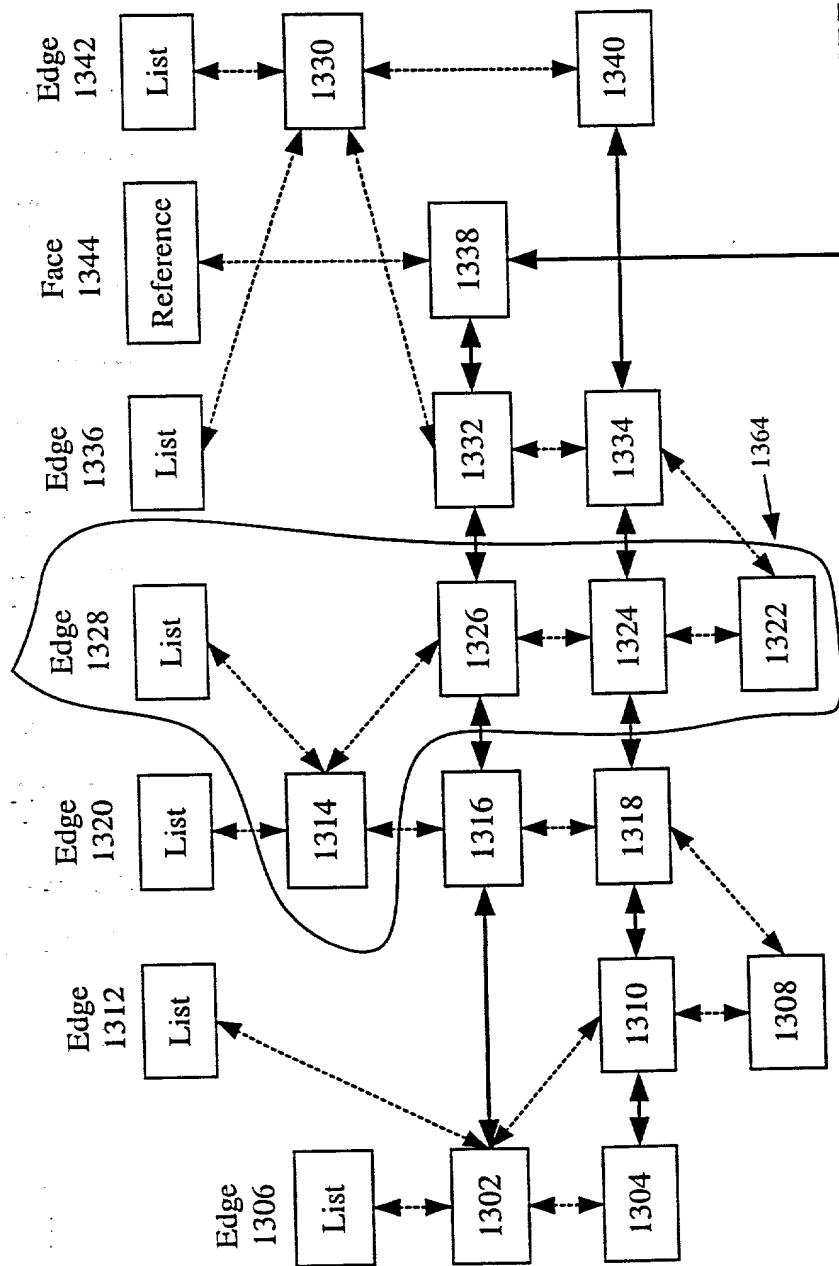
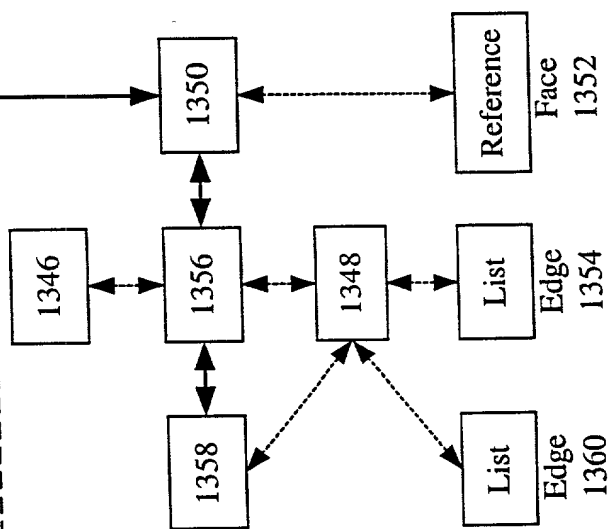


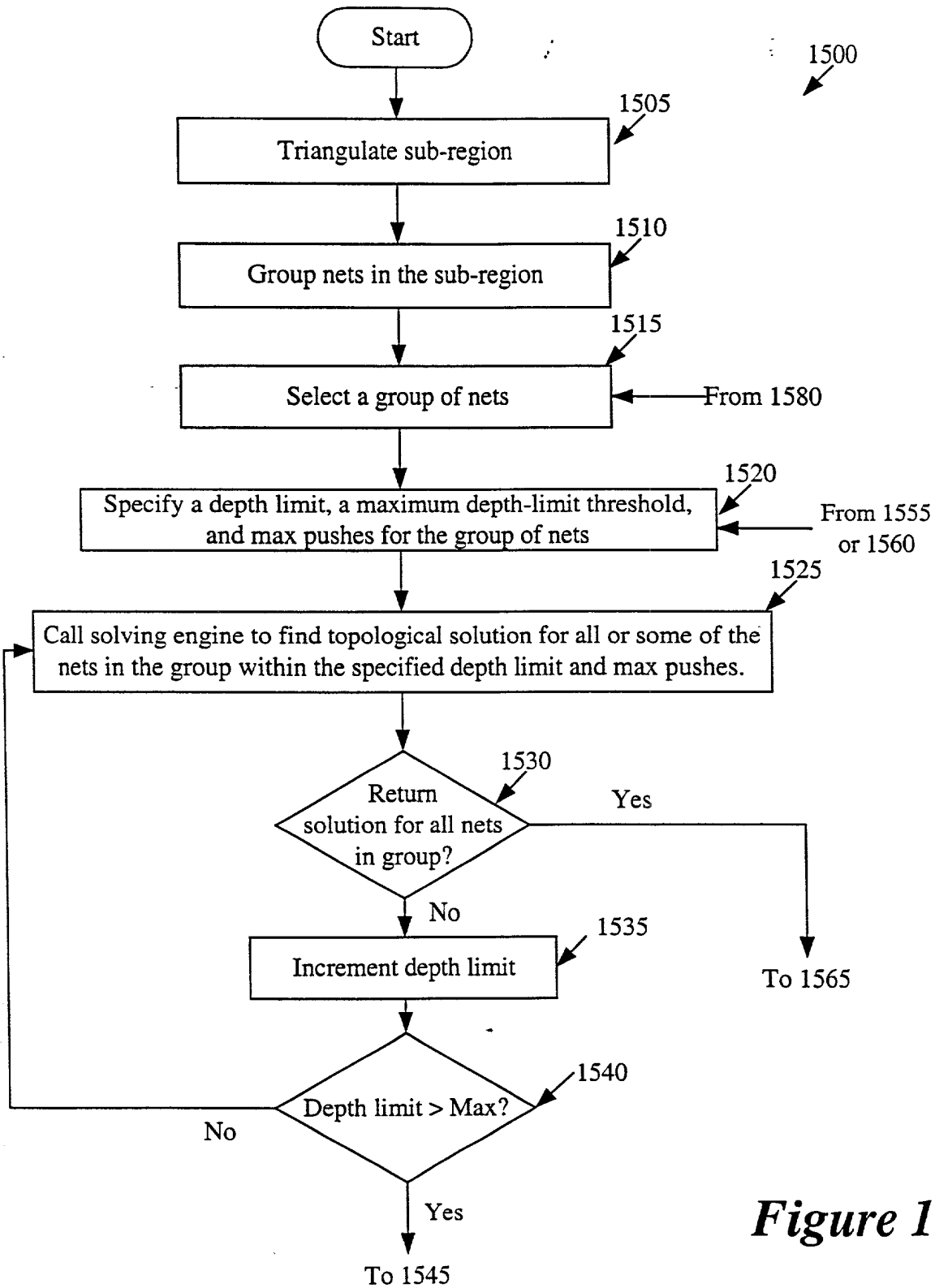
Figure 13



**Layer 3**

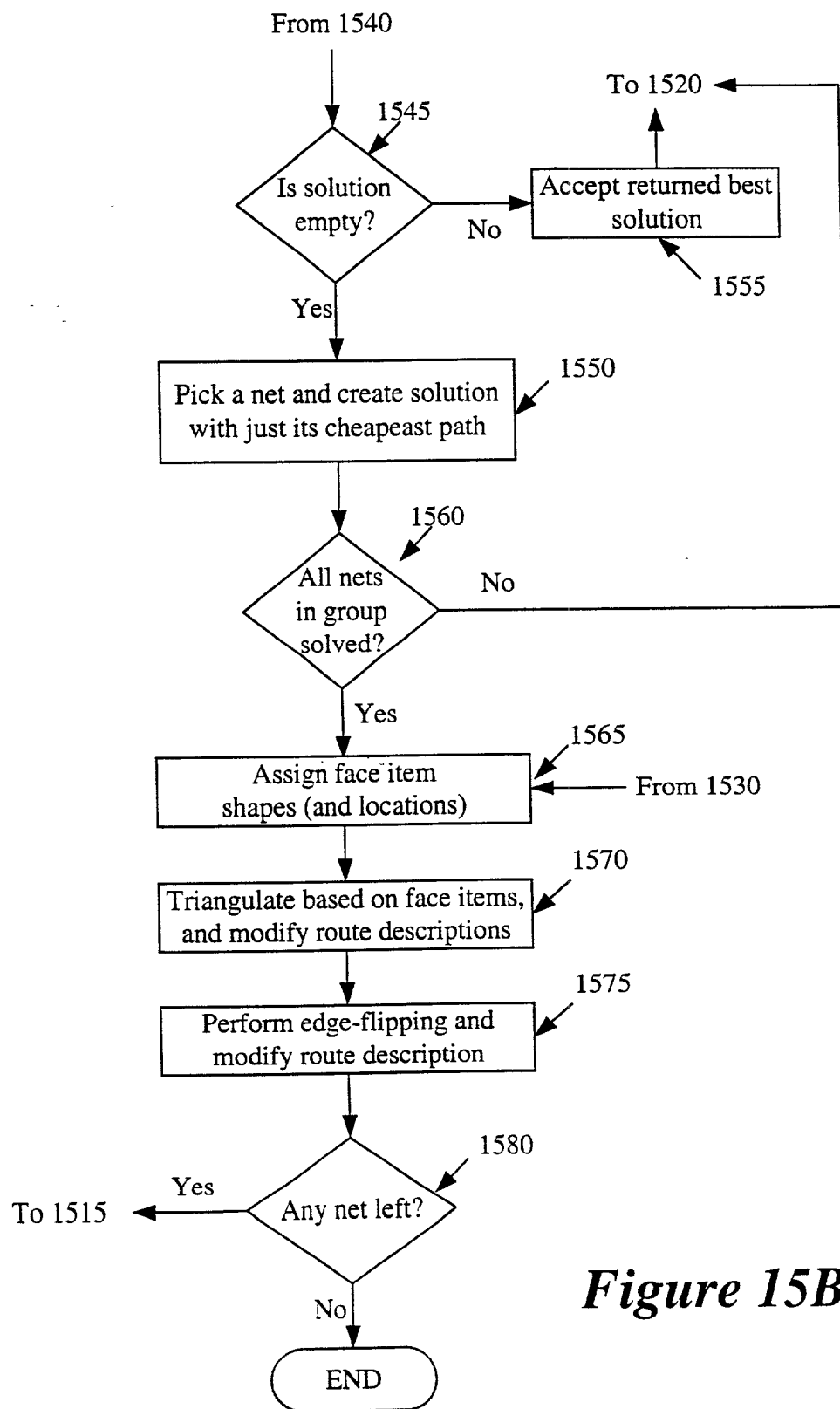


**Figure 14**

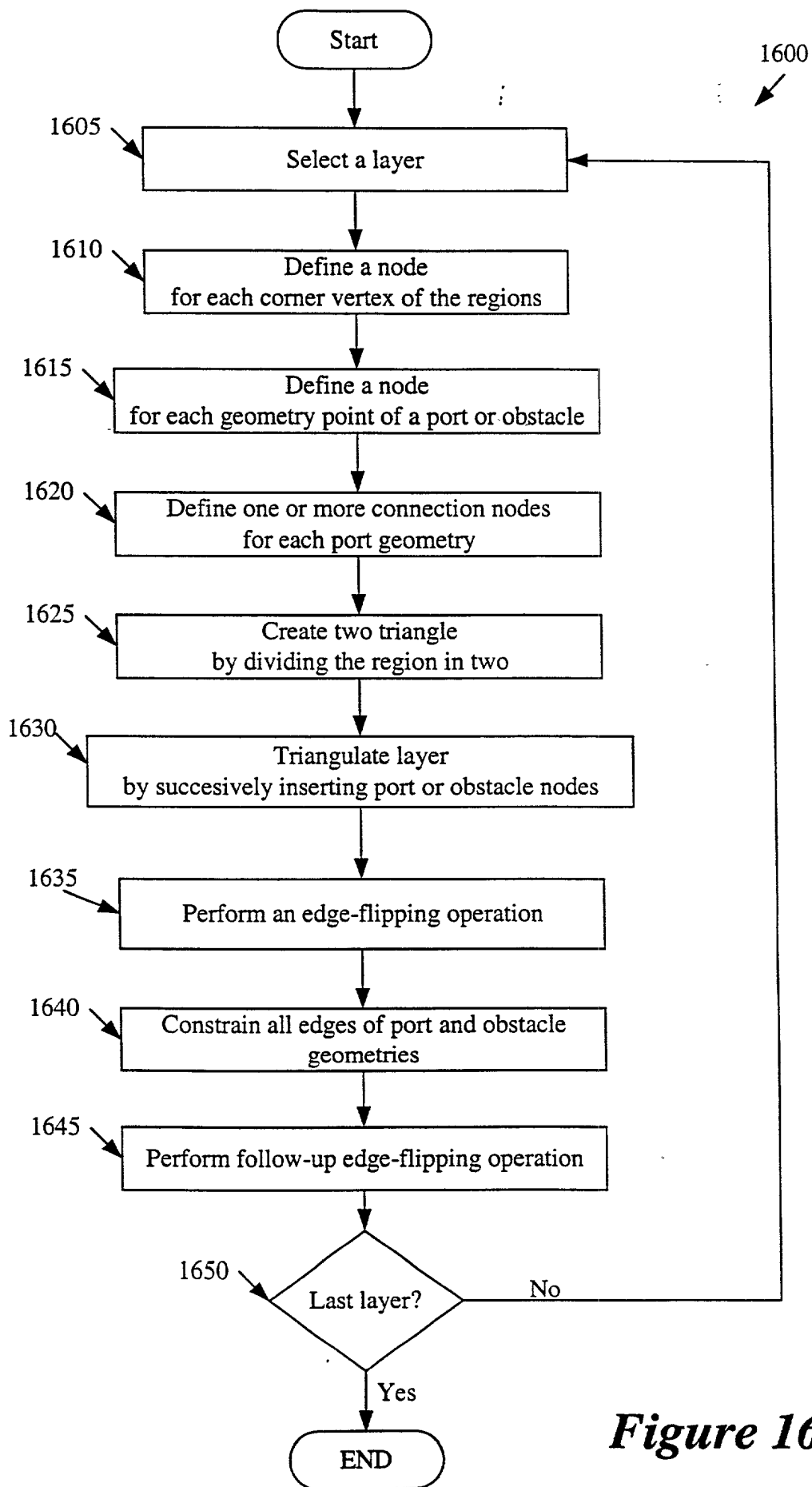


**Figure 15A**

**Figure 15:** *Figure 15A*  
*Figure 15B*



**Figure 15B**



**Figure 16**

20160109090001

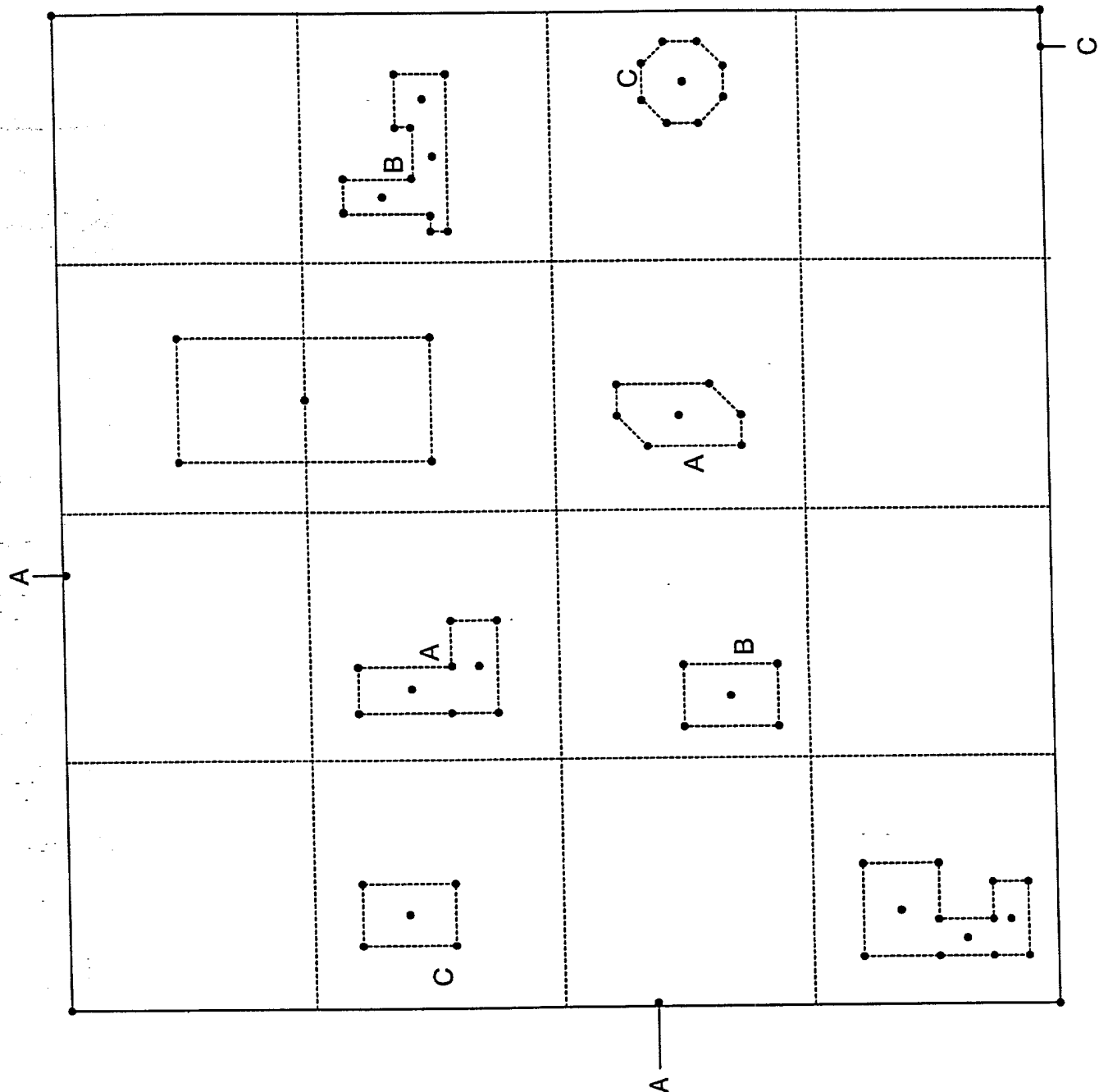


Figure 17

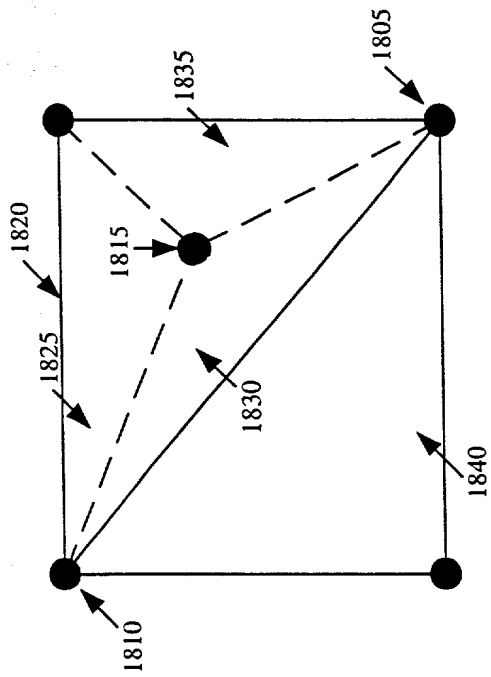


Figure 18

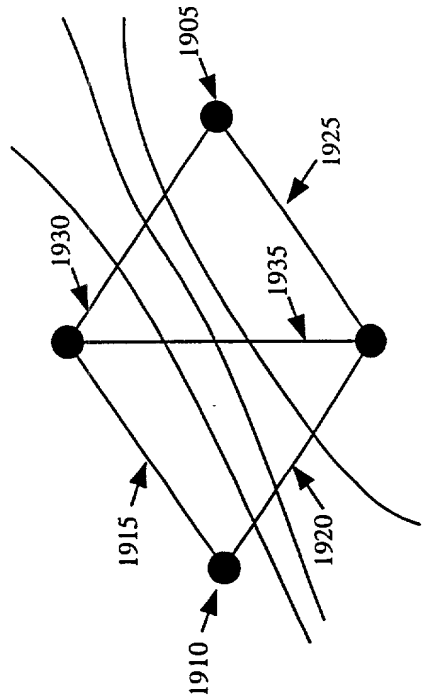


Figure 19

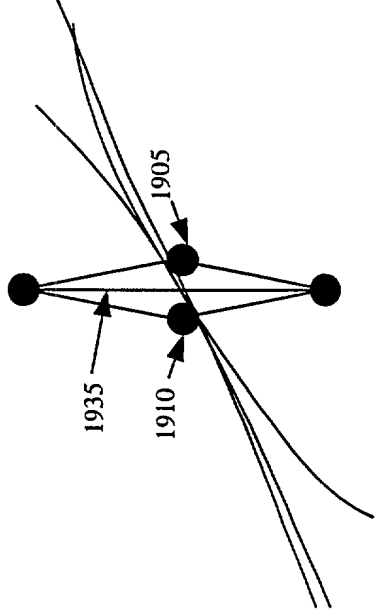


Figure 20

Figure 21

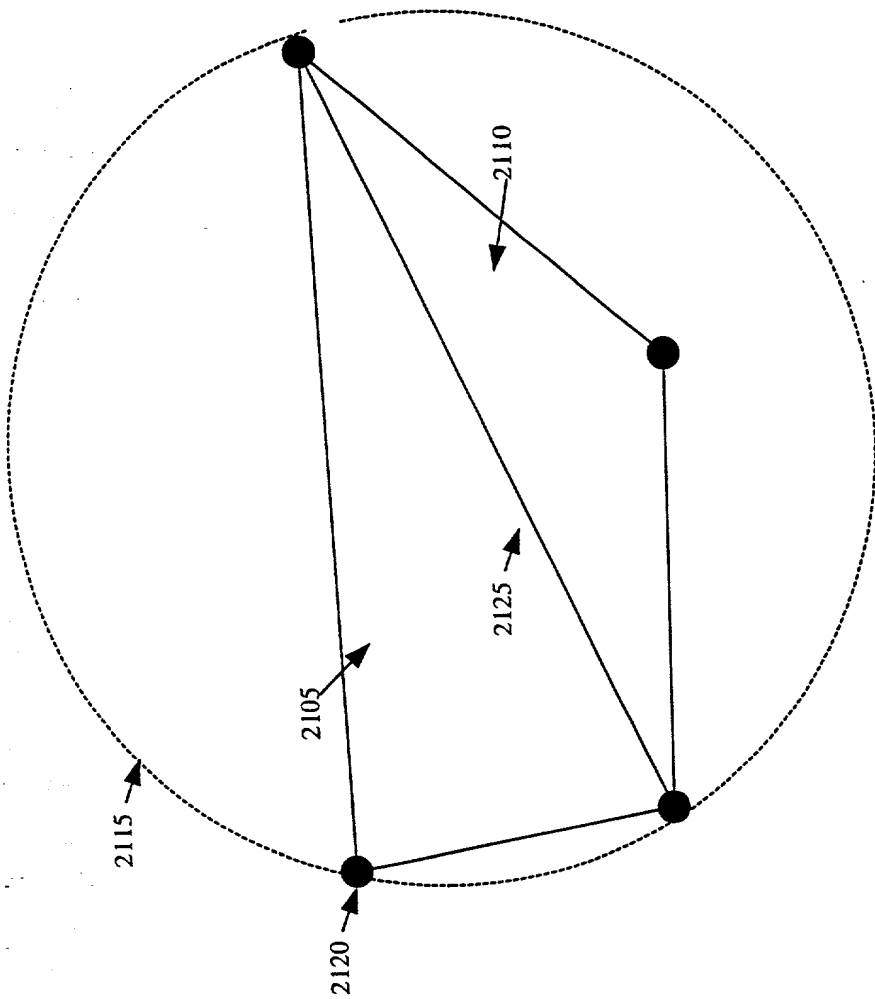
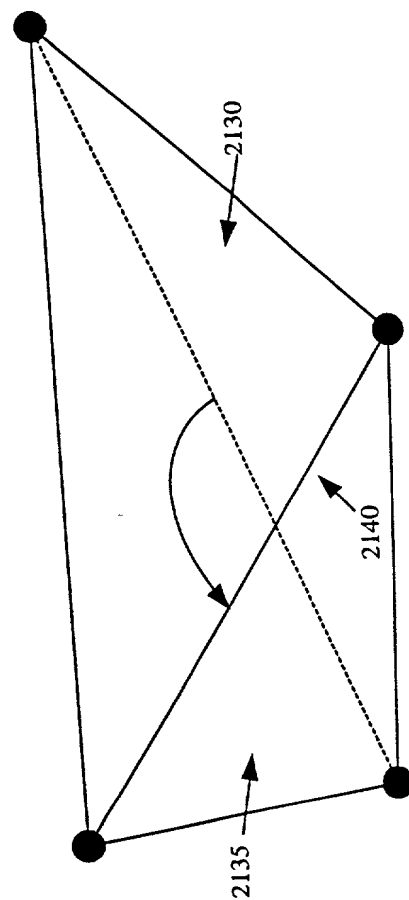


Figure 22





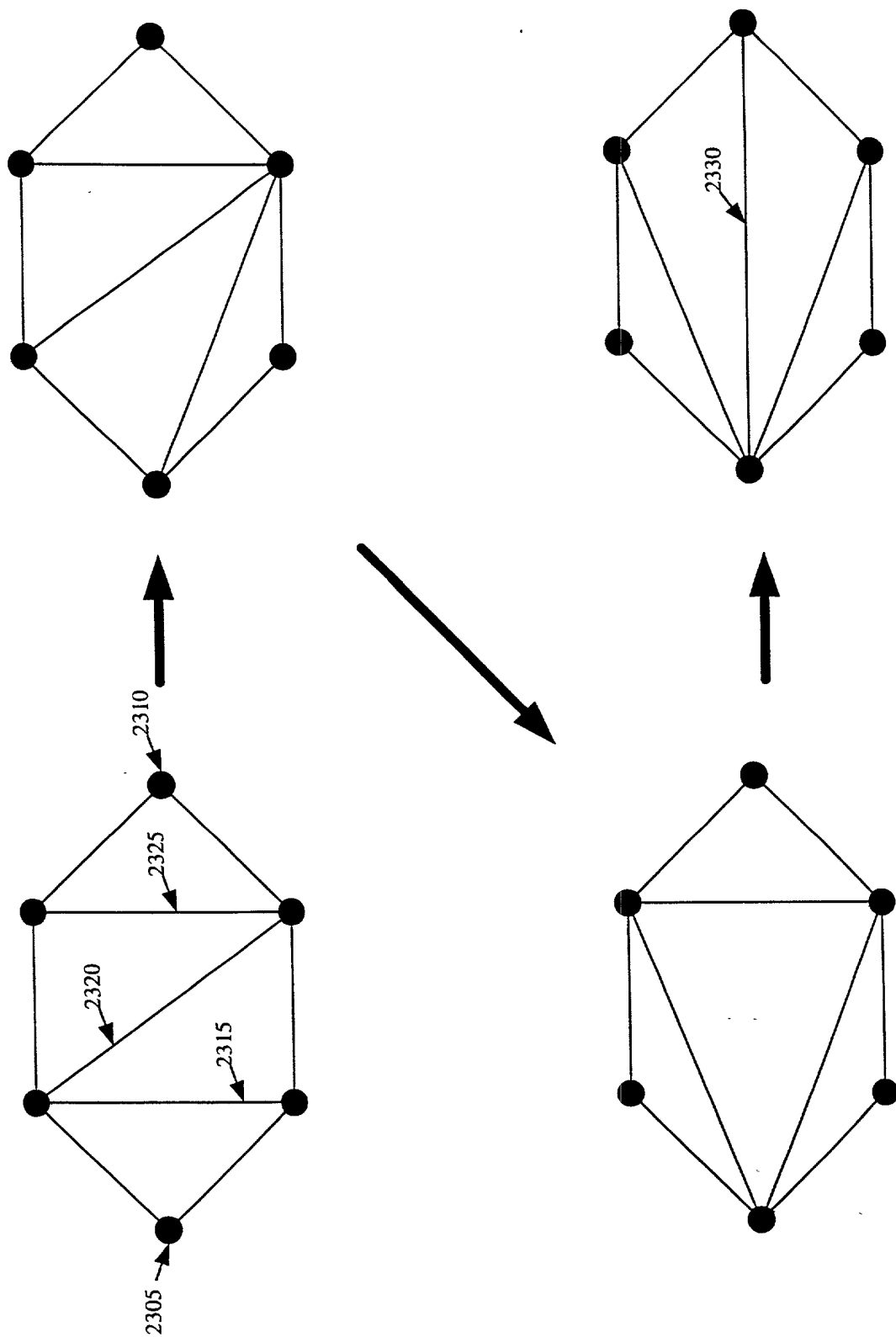


Figure 23

2015-09-09

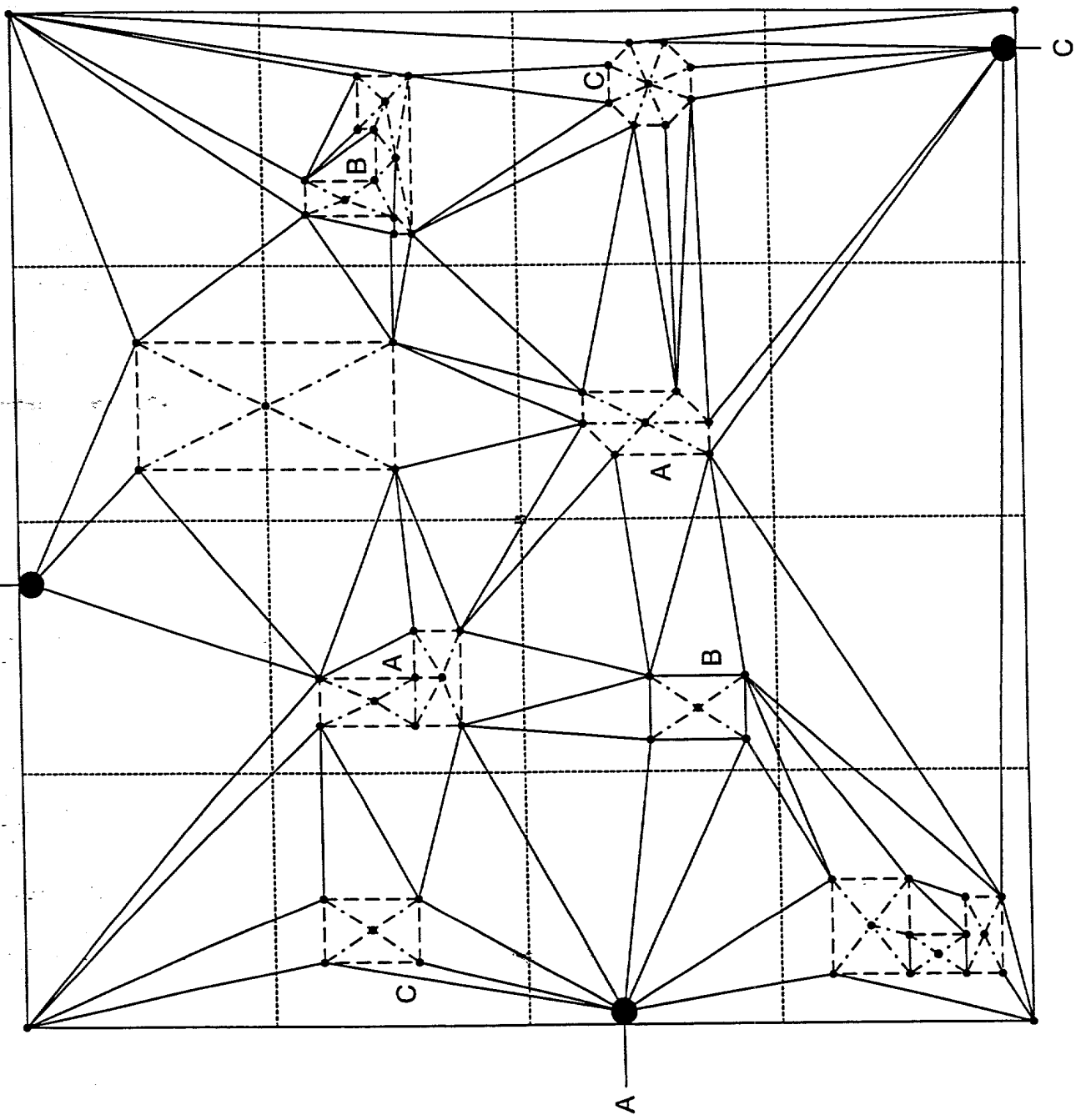
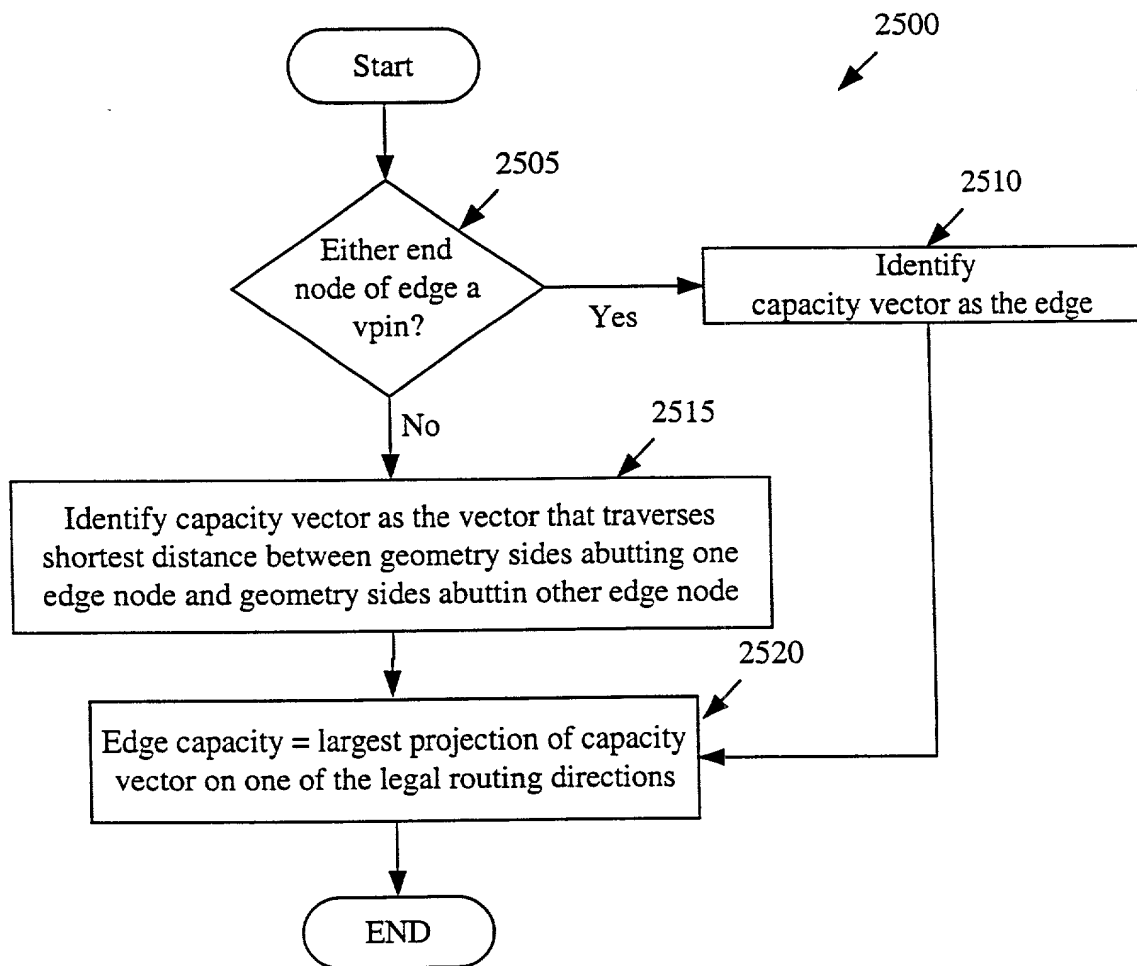


Figure 24

2025 RELEASE UNDER E.O. 14176



**Figure 25**

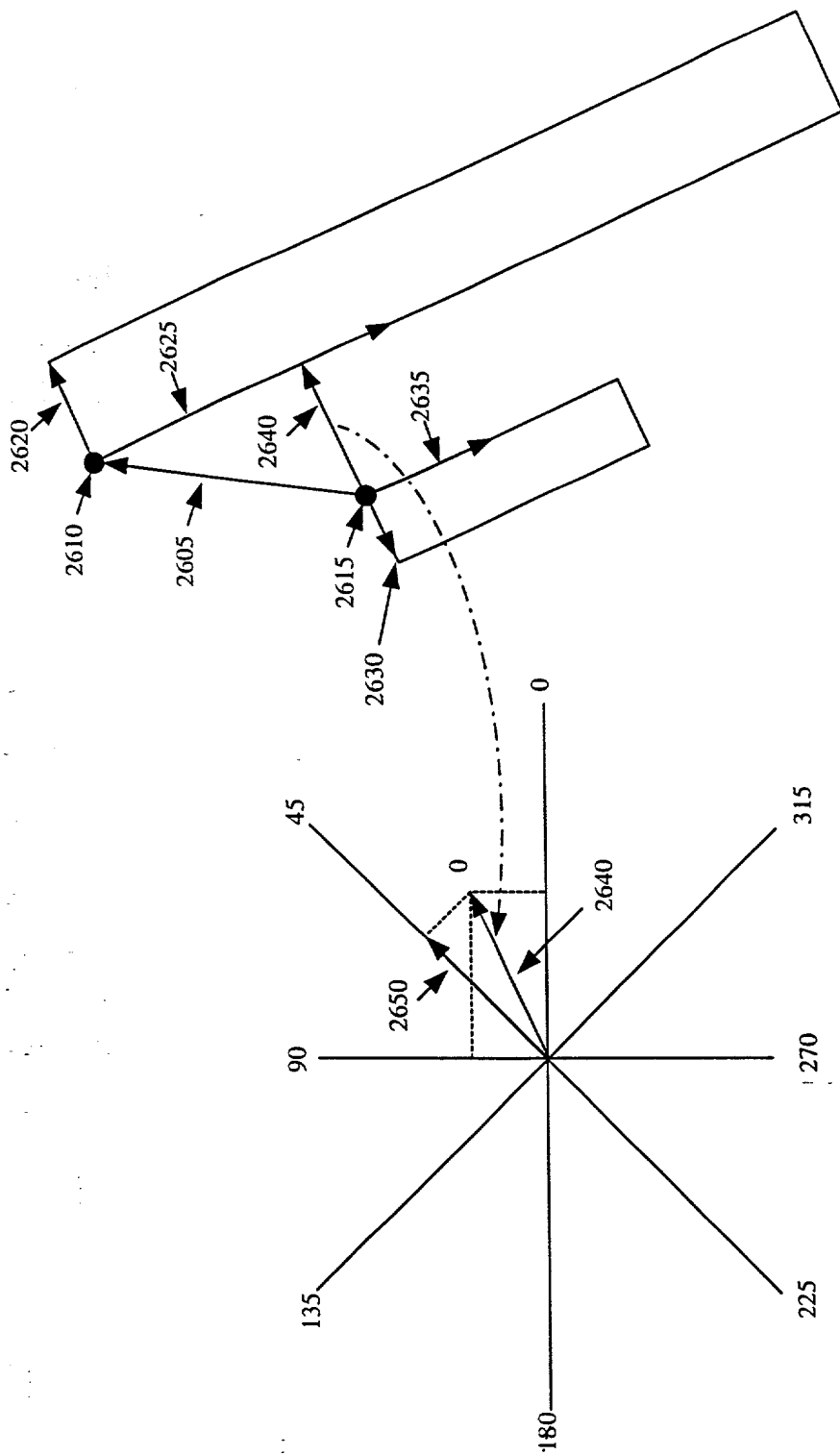


Figure 26

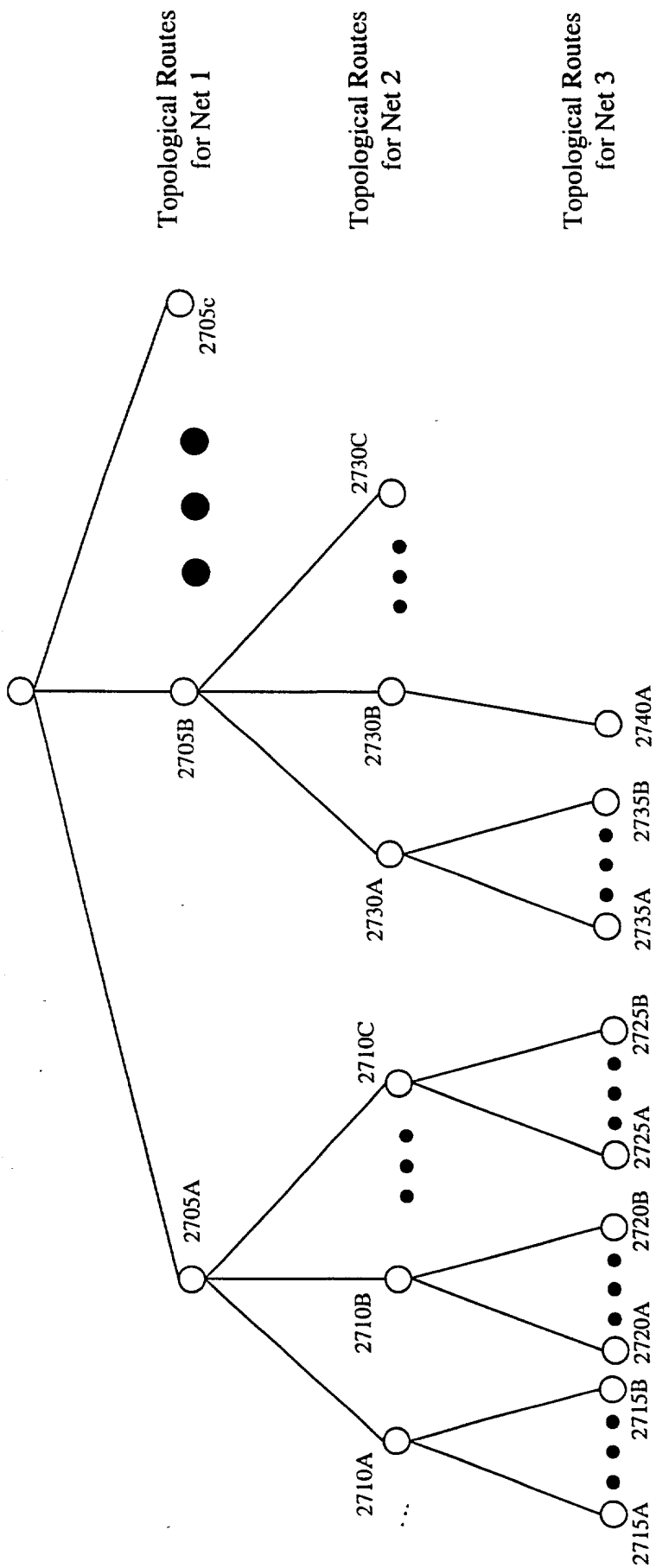
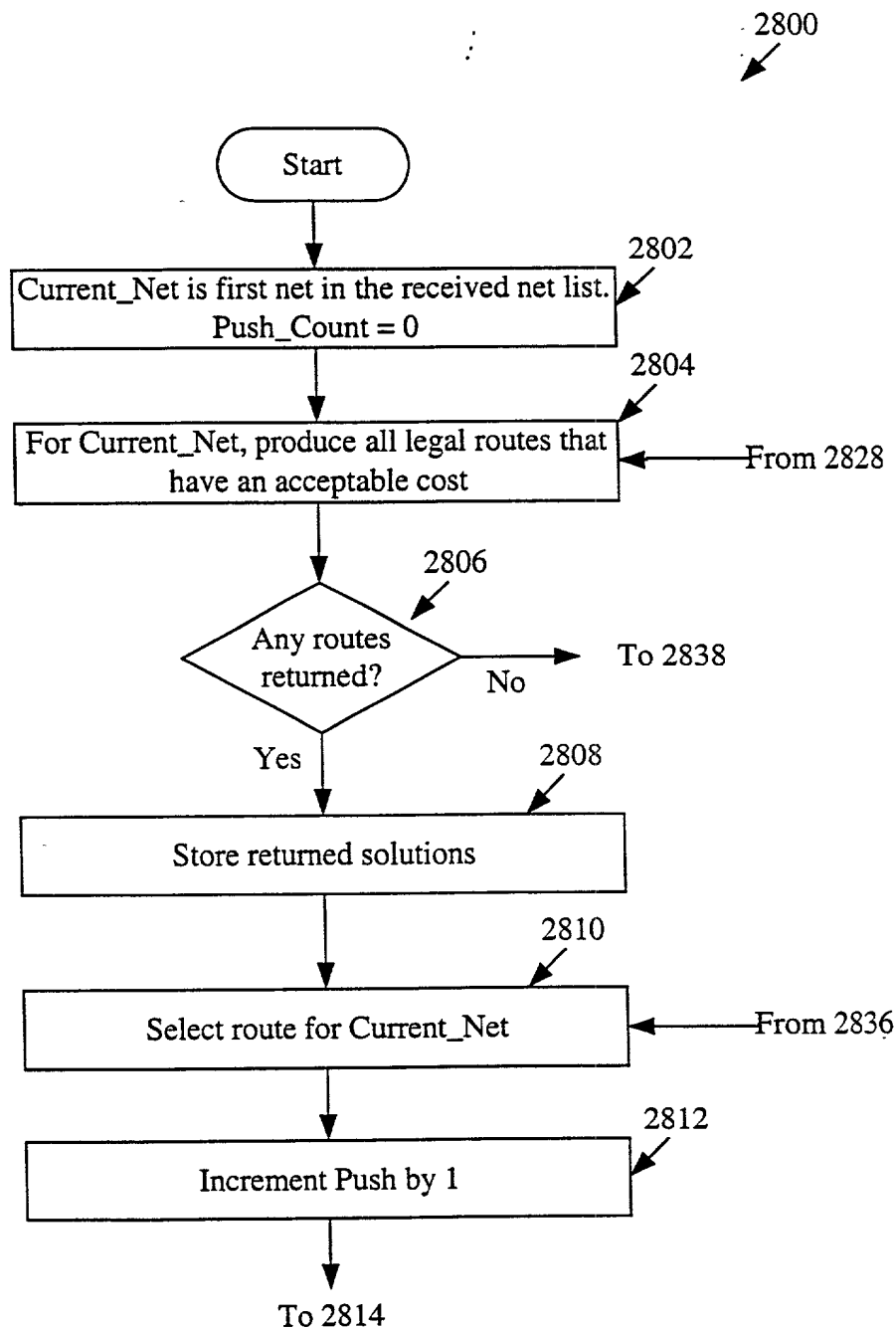
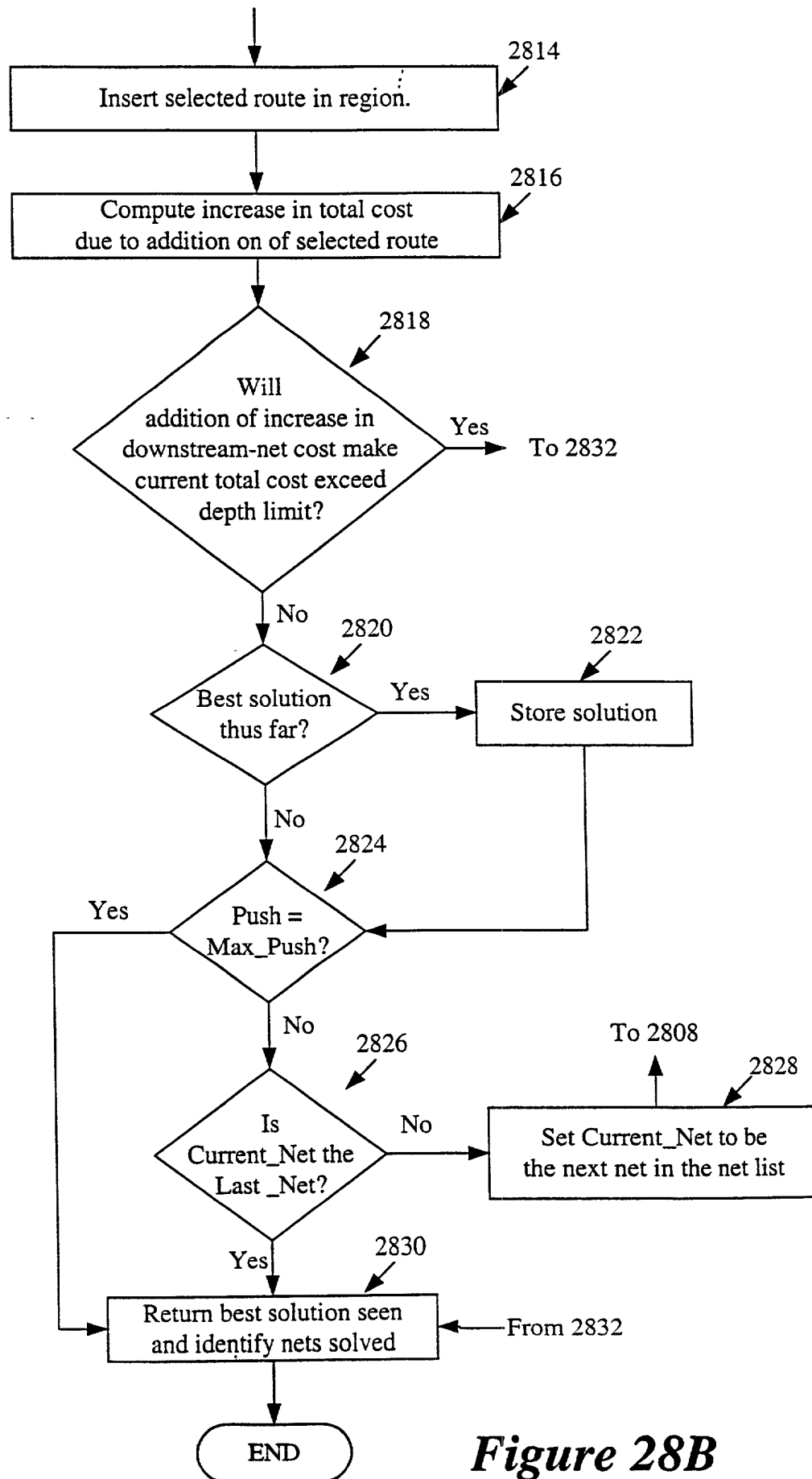


Figure 27

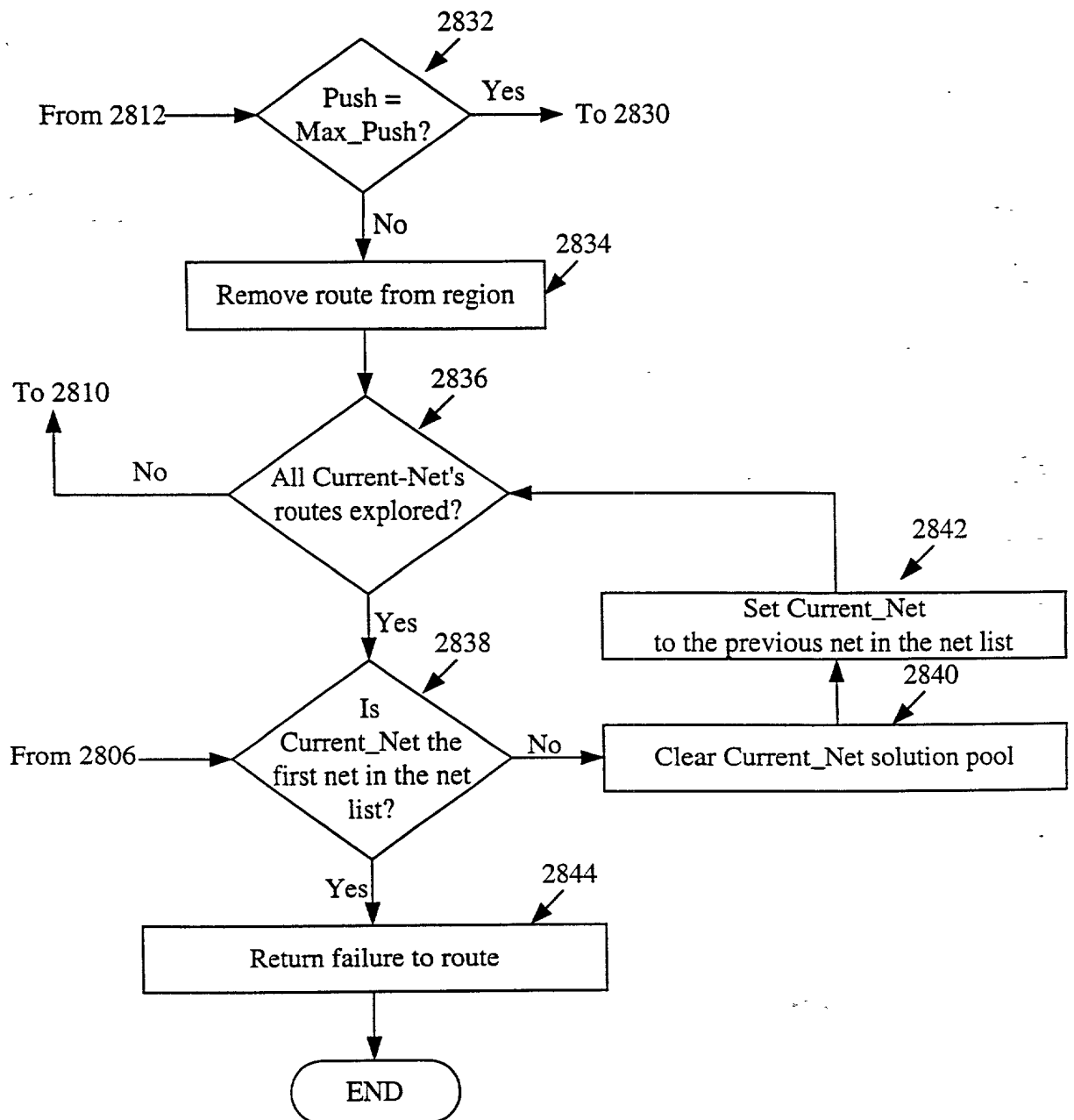


**Figure 28A**

**Figure 28:** Figure 28A  
Figure 28B  
Figure 28C

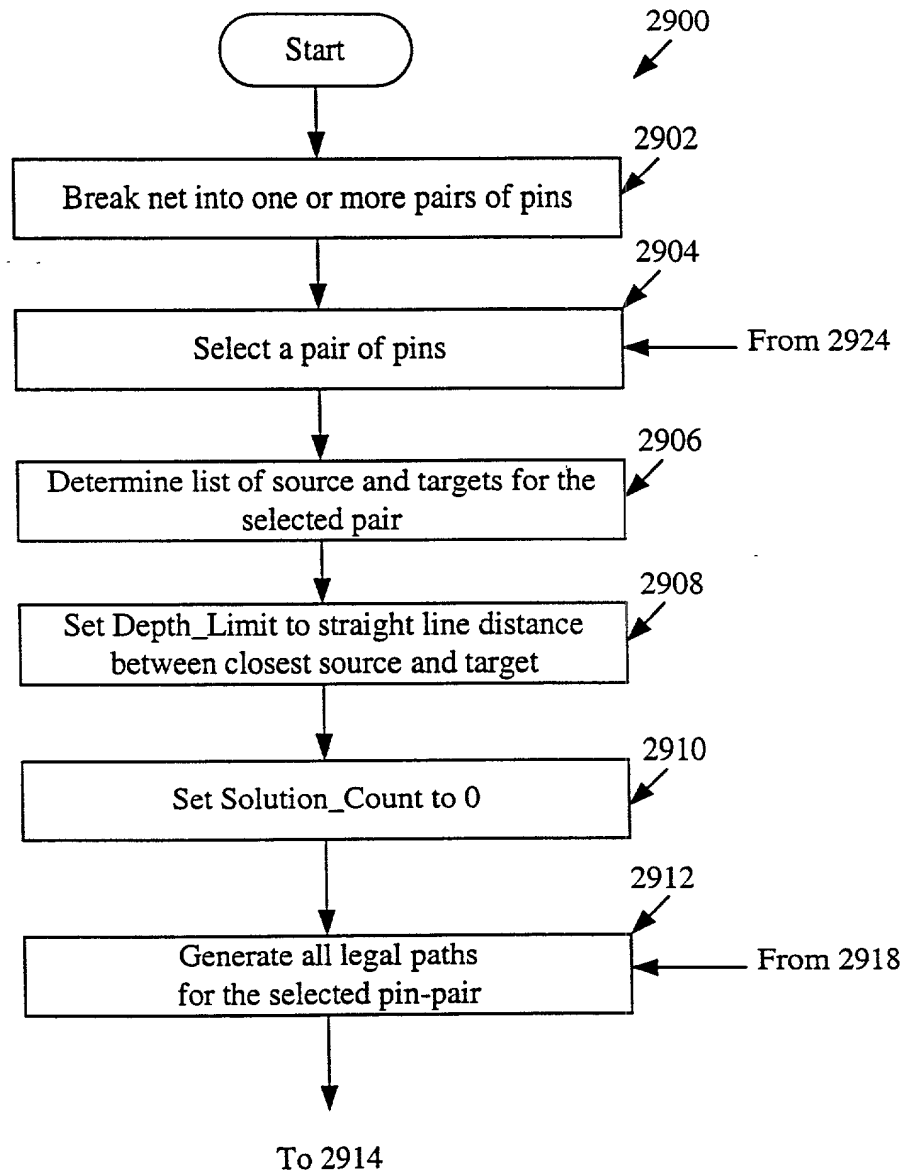


**Figure 28B**



*Figure 28C*

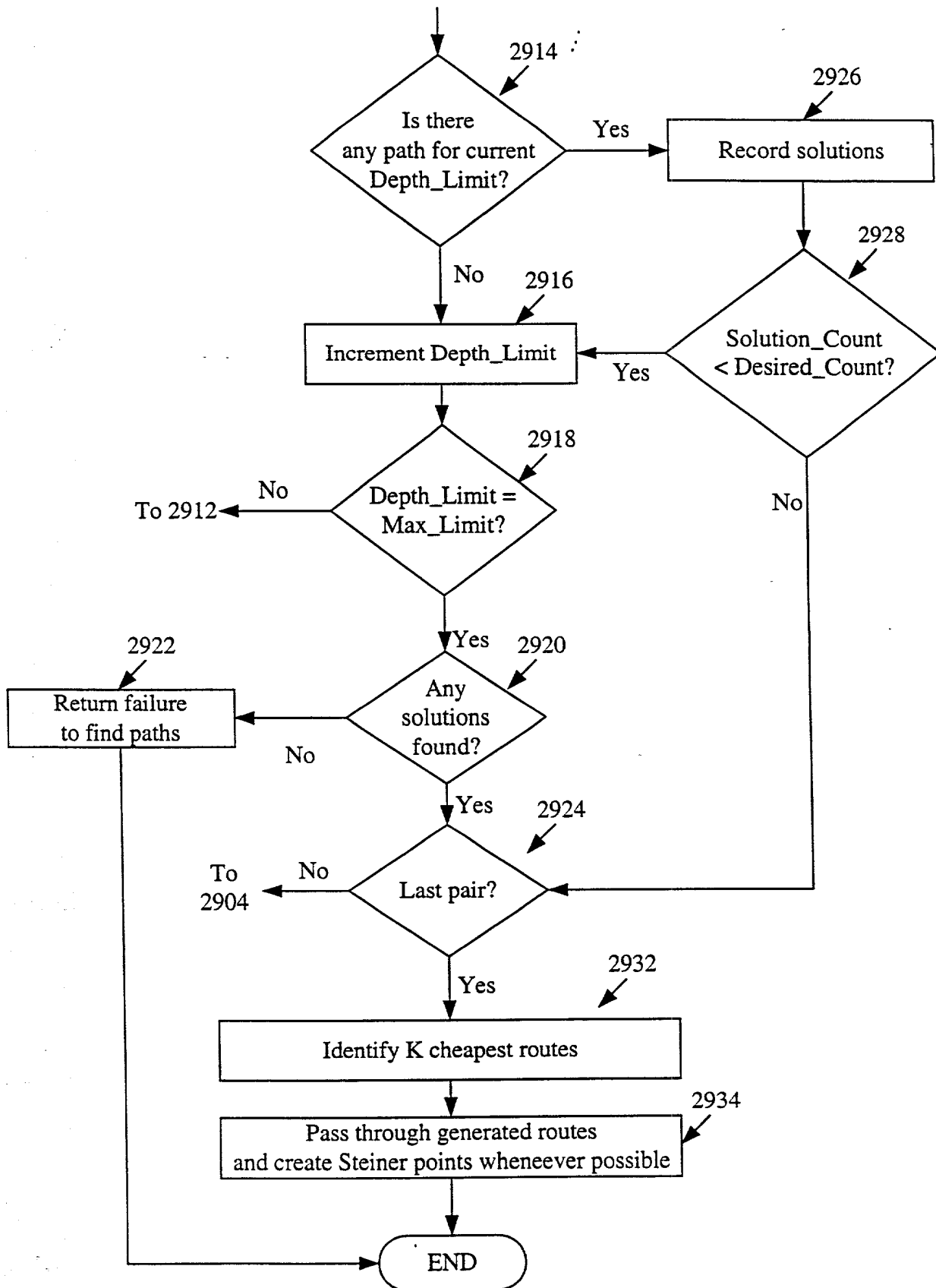




**Figure 29A**

**Figure 29:**  $\frac{\text{Figure 29A}}{\text{Figure 29B}}$

20160606 043402



**Figure 29B**

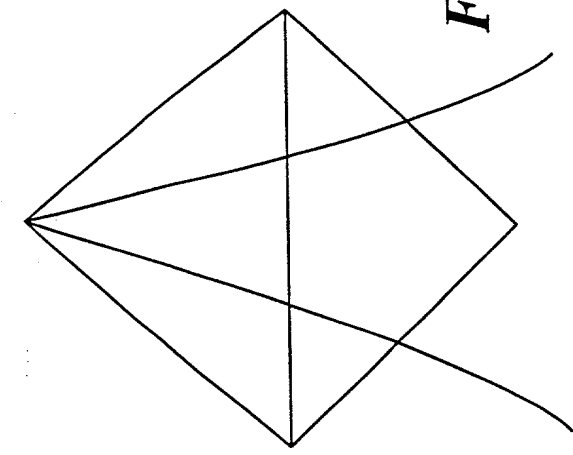


Figure 30A

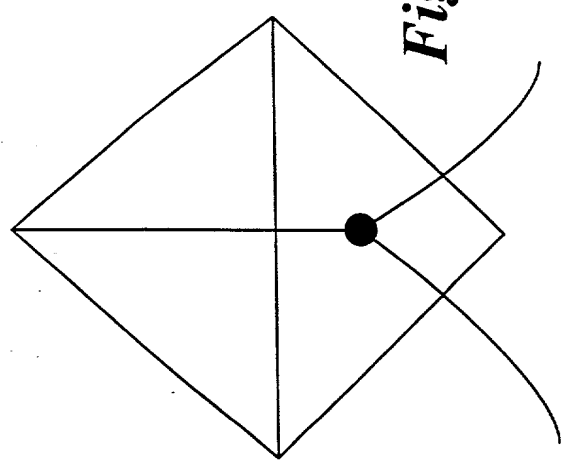


Figure 30B

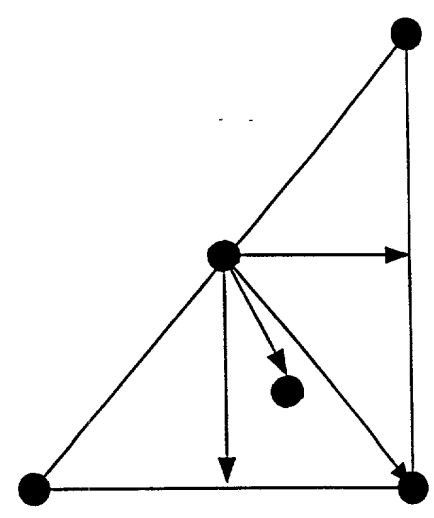


Figure 32

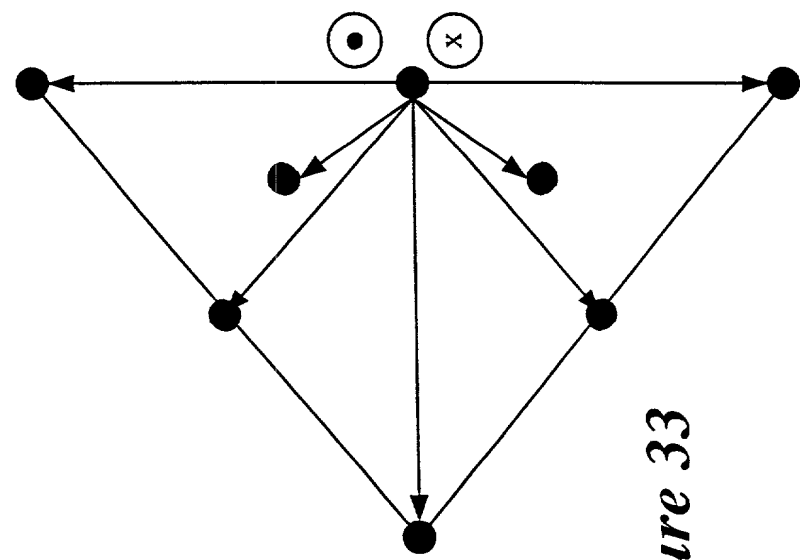


Figure 33

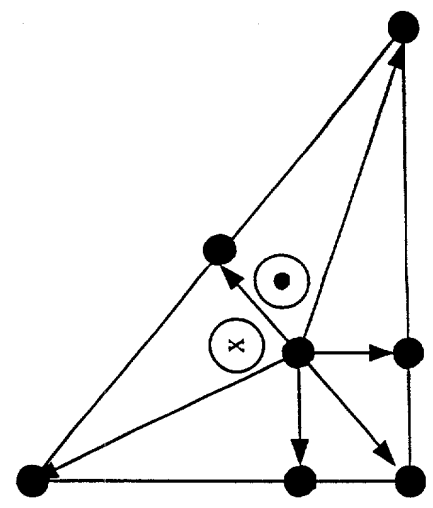
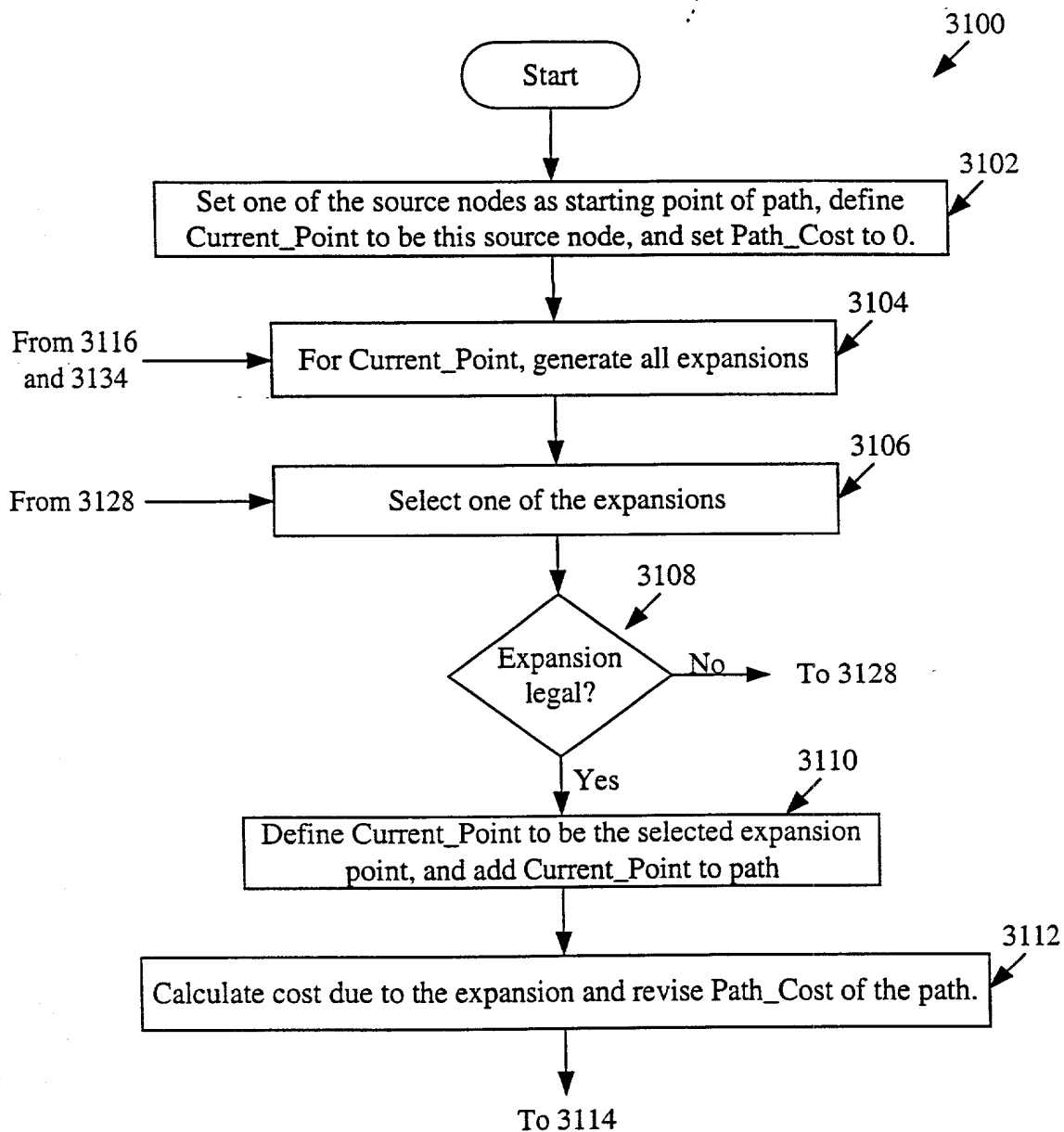


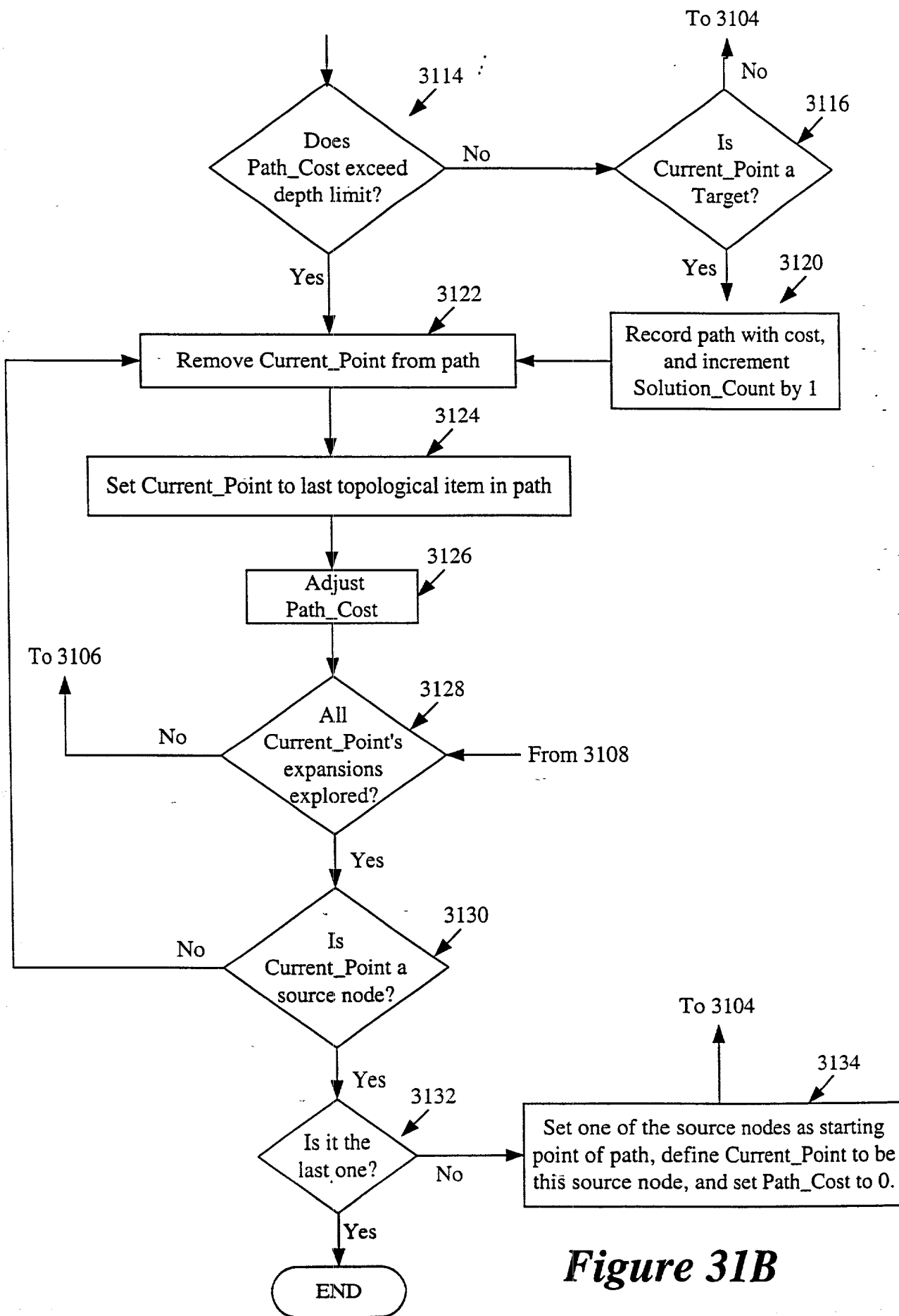
Figure 34

2015-09-01 09:09:00

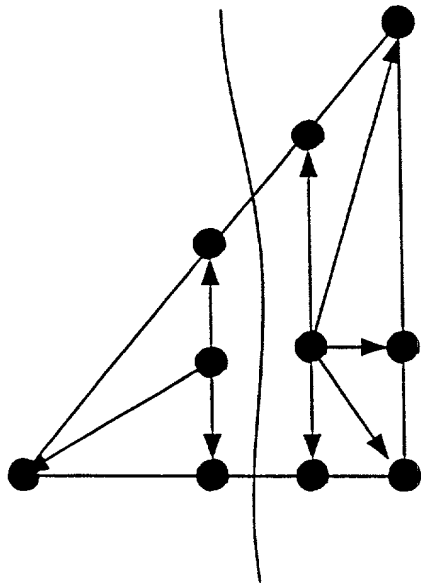


**Figure 31A**

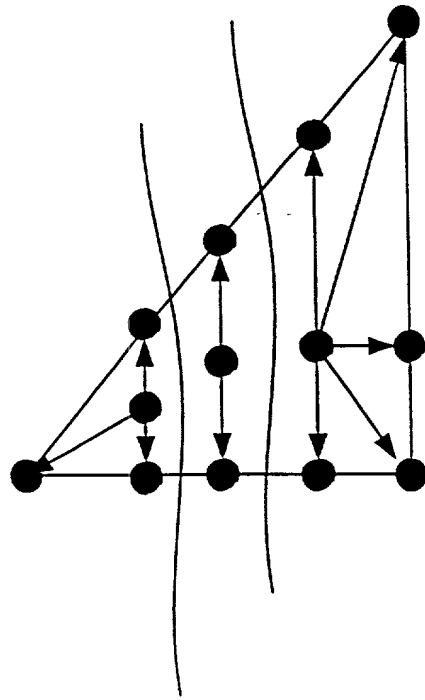
**Figure 31:**  $\frac{\text{Figure 31A}}{\text{Figure 31B}}$



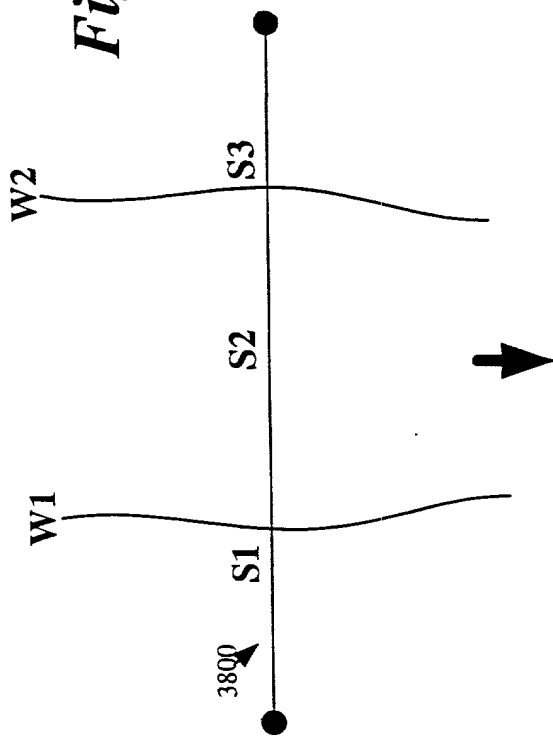
**Figure 31B**



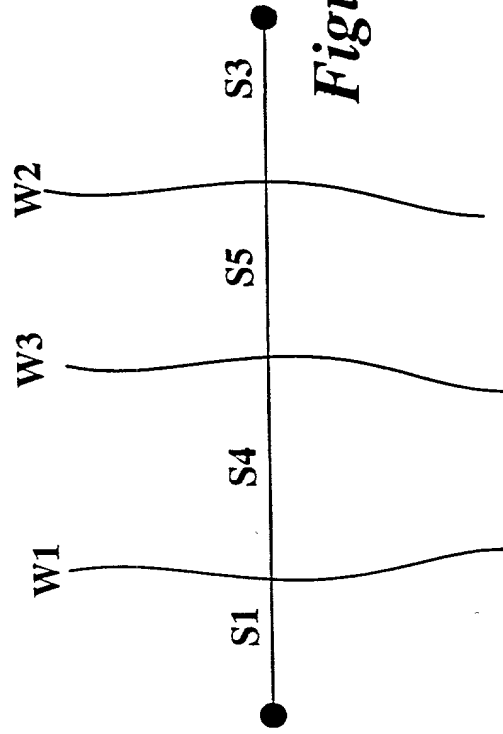
**Figure 35**



**Figure 36**



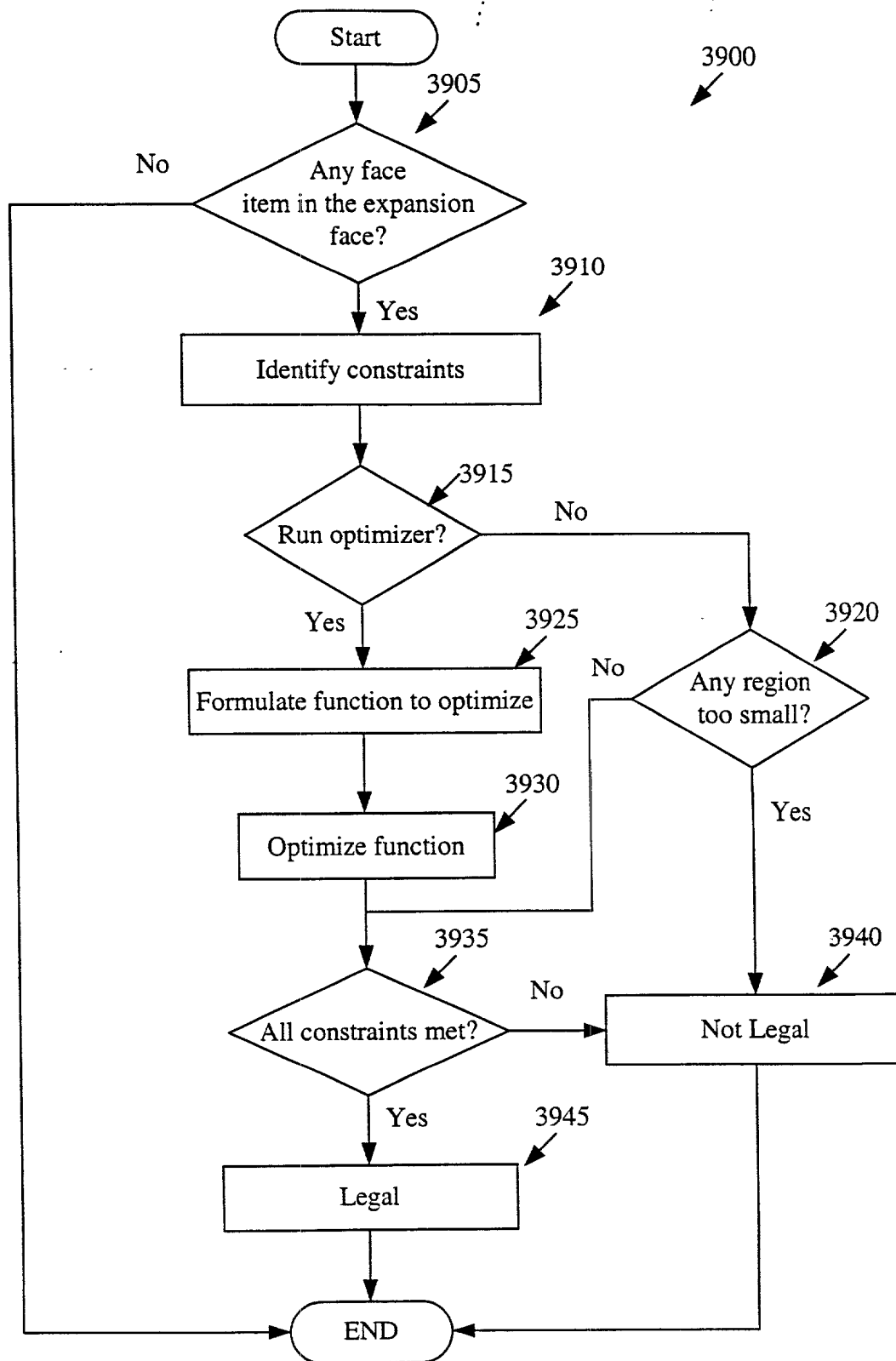
**Figure 38A**



**Figure 38B**

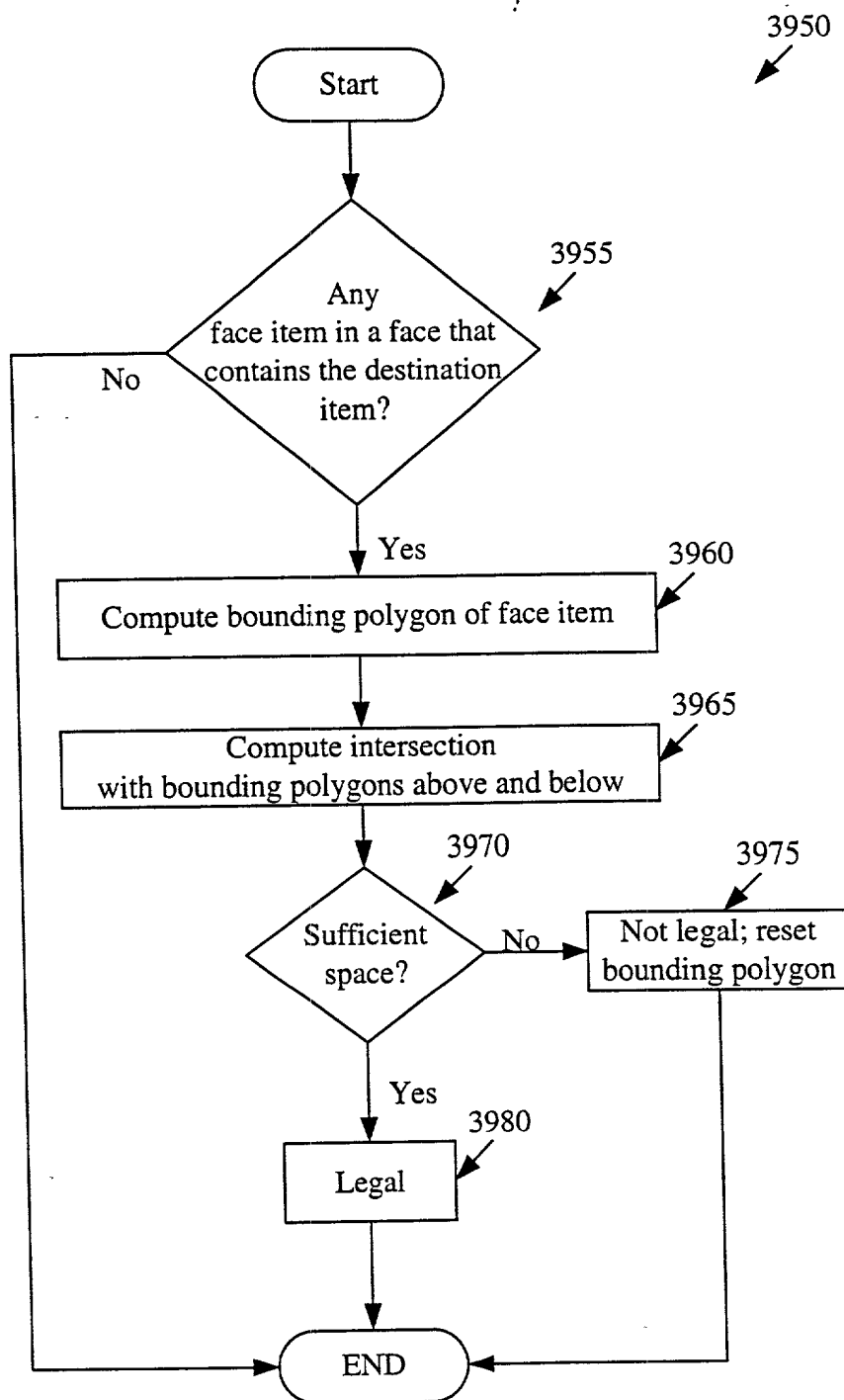
To:		Node	Face Item	Edge Item
From:	Node	<ul style="list-style-type: none"> <li>• Planarity</li> <li>• Vias</li> </ul>	<ul style="list-style-type: none"> <li>• Vias</li> </ul>	<ul style="list-style-type: none"> <li>• Planarity</li> <li>• Vias</li> <li>• Edge</li> <li>• Capacity</li> </ul>
	Face Item	<ul style="list-style-type: none"> <li>• Vias</li> </ul>	<ul style="list-style-type: none"> <li>• Vias</li> </ul>	<ul style="list-style-type: none"> <li>• Vias</li> <li>• Edge</li> <li>• Capacity</li> </ul>
	Edge Item	<ul style="list-style-type: none"> <li>• Planarity</li> <li>• Vias</li> </ul>	<ul style="list-style-type: none"> <li>• Vias</li> </ul>	<ul style="list-style-type: none"> <li>• Planarity</li> <li>• Vias</li> <li>• Edge</li> <li>• Capacity</li> </ul>

*Figure 37*

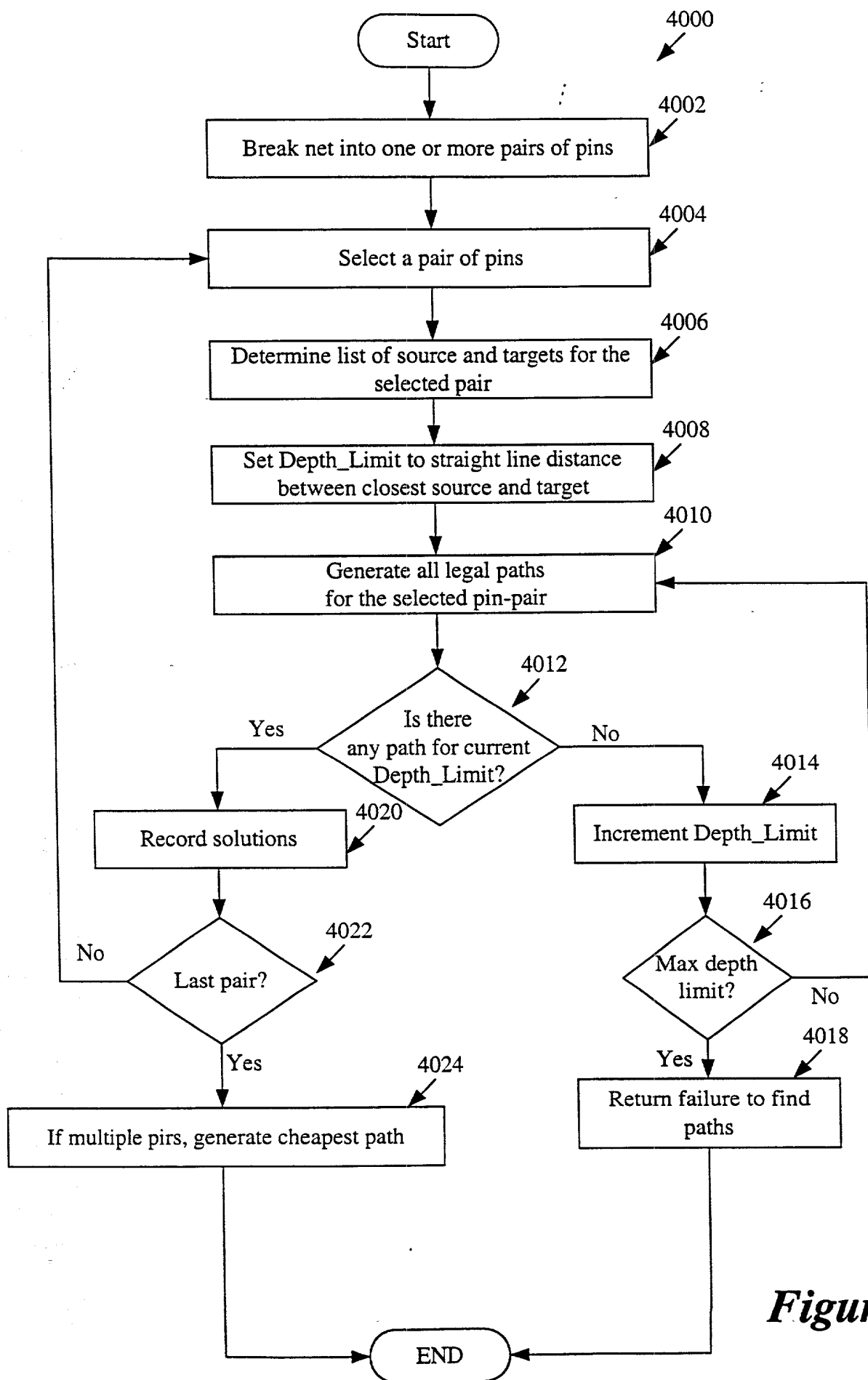


**Figure 39A**

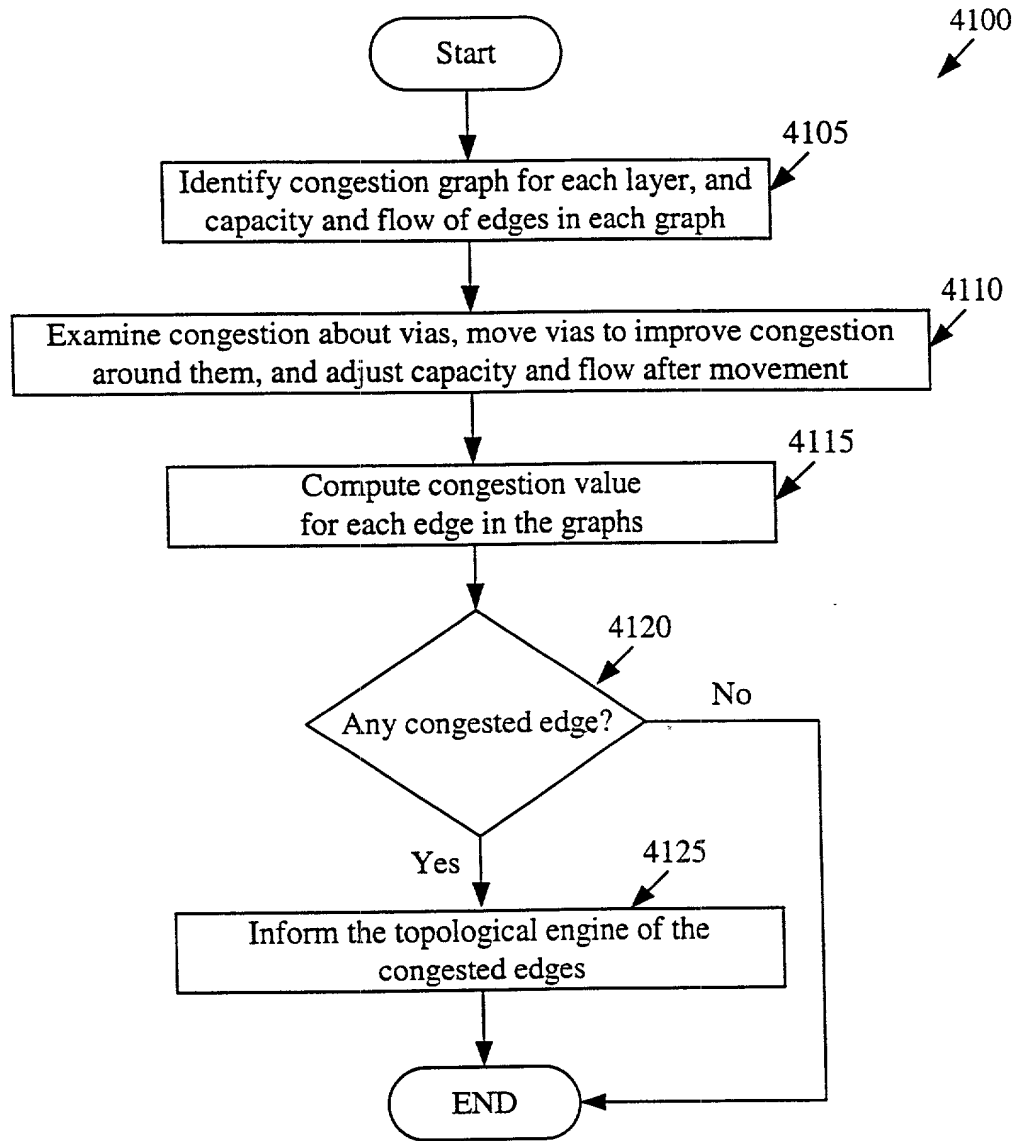




**Figure 39B**



**Figure 40**



**Figure 41**

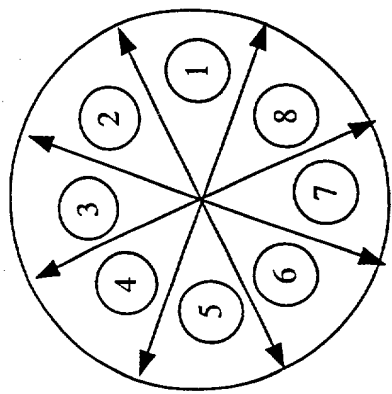


Figure 42

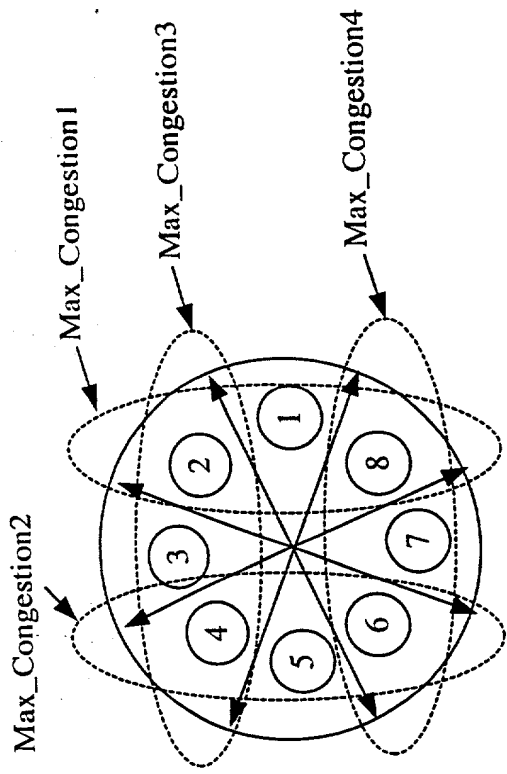


Figure 44

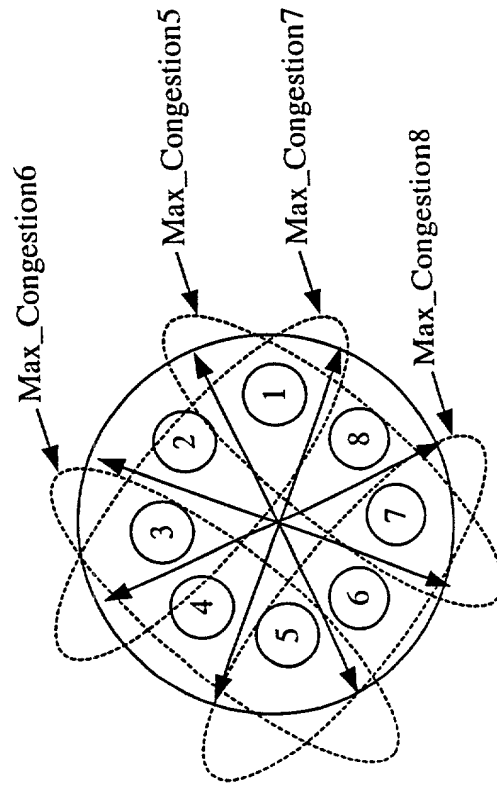


Figure 45

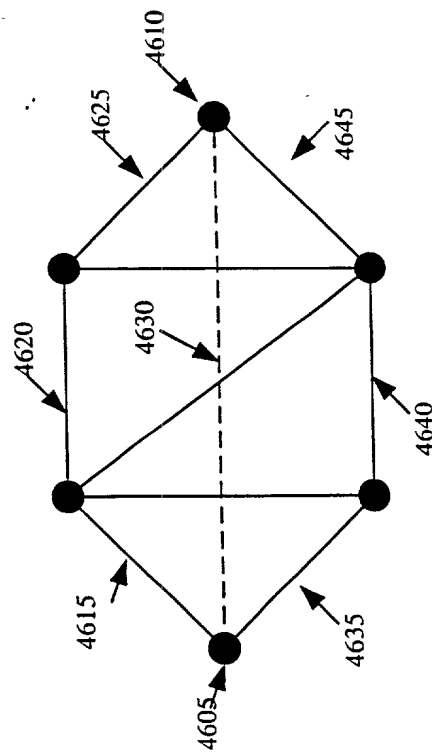
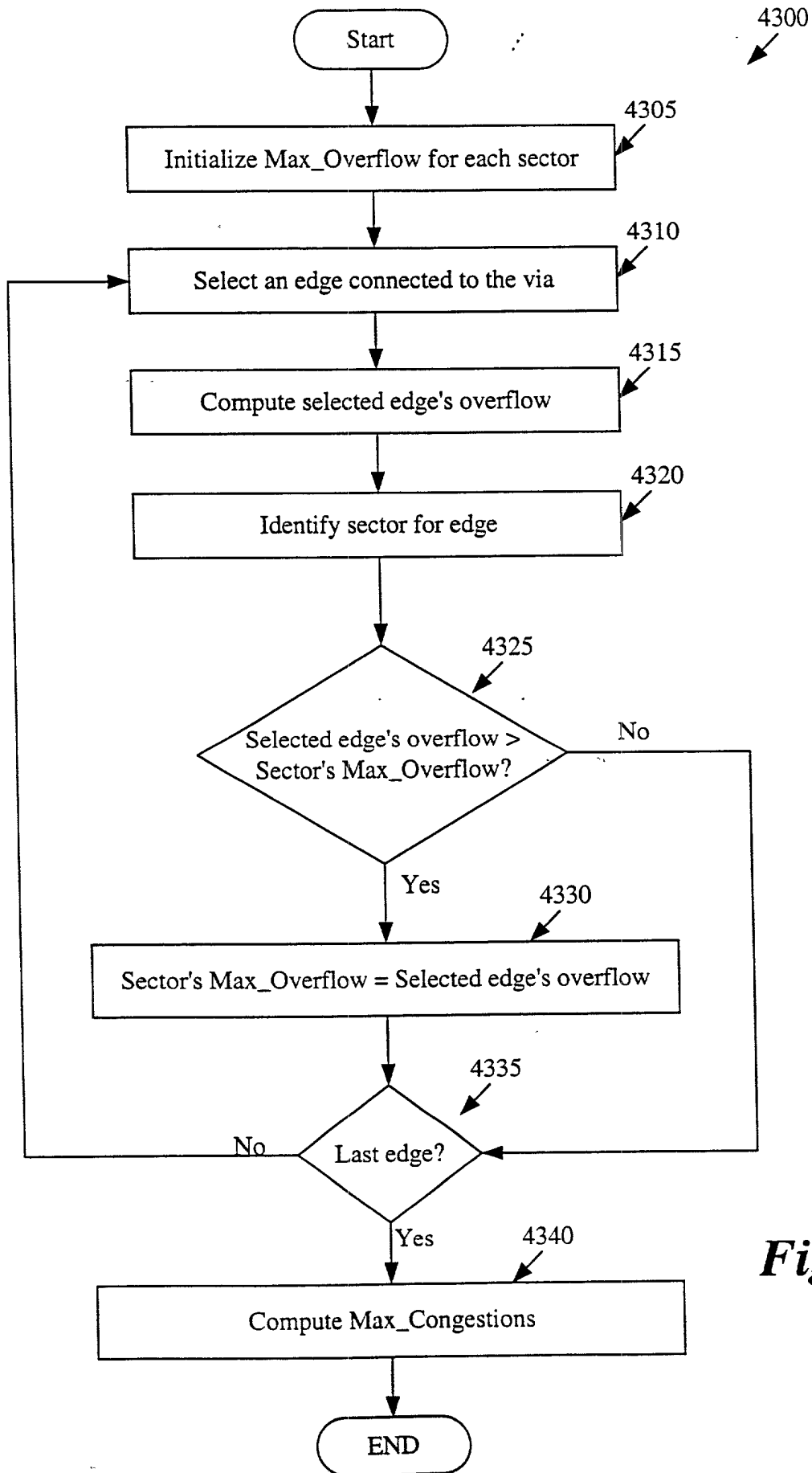


Figure 46



**Figure 43**

A hand-drawn diagram on a rectangular background. It features a large, irregular polygon. Inside this polygon, there are two squares. One square is located in the upper-left quadrant of the polygon, and the other is in the lower-right quadrant. The polygon's boundary is defined by several line segments. Two labels are present: '4710' is written near the top edge of the polygon, and '4705' is written to the right of the polygon, with an arrow pointing towards its rightmost edge. The drawing is done in black ink on a white background.

FIGURE 47

20250601 043402

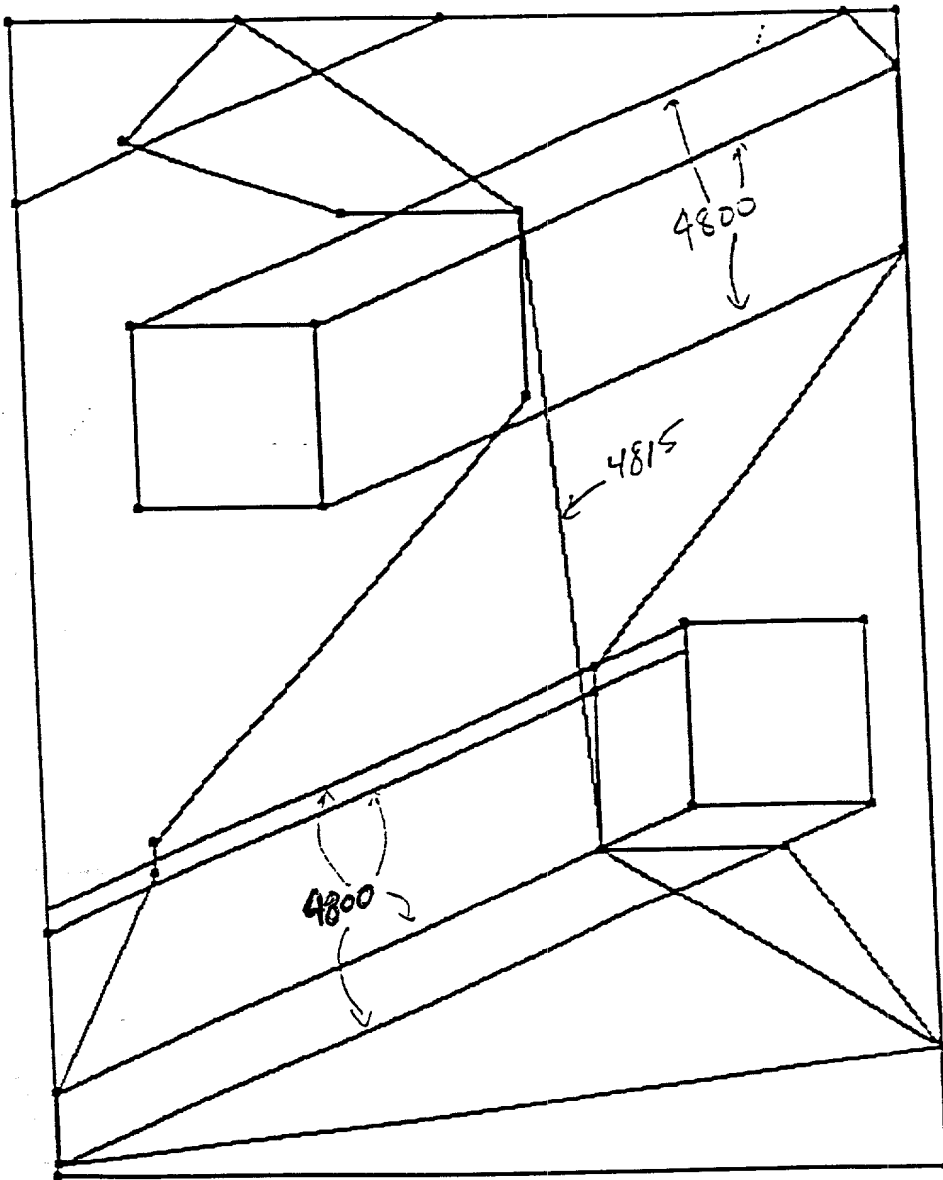


FIGURE 48A

20150101 090900

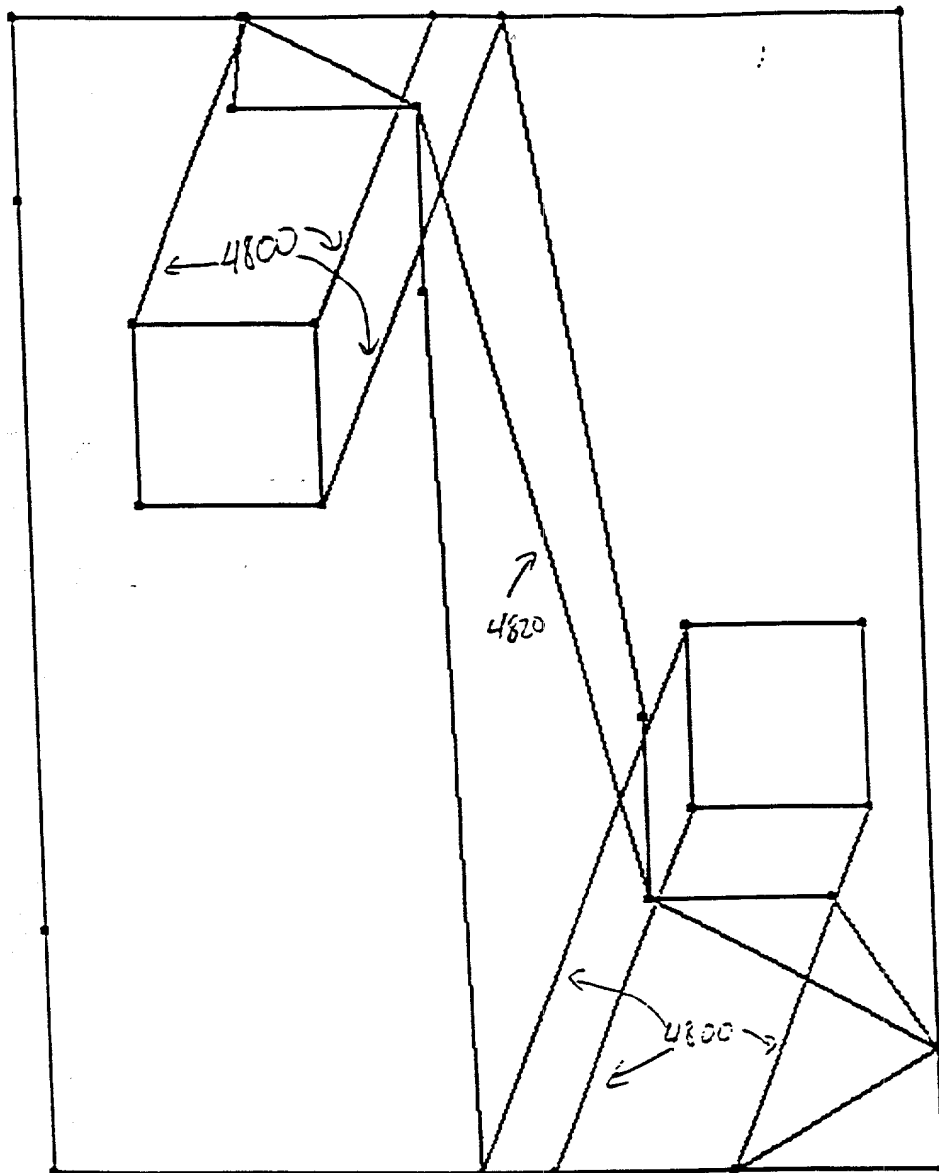


FIGURE 48B



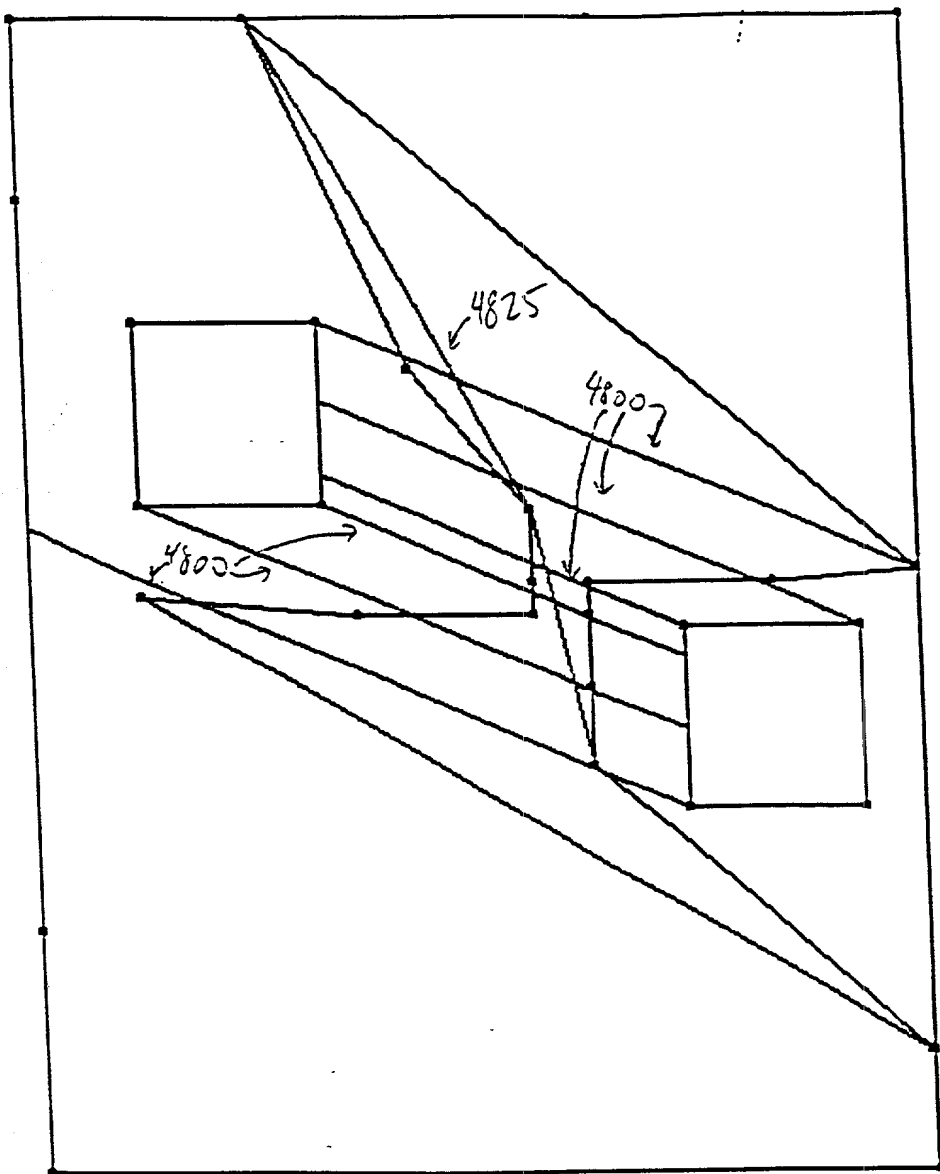


FIGURE 48C

20150501 090900

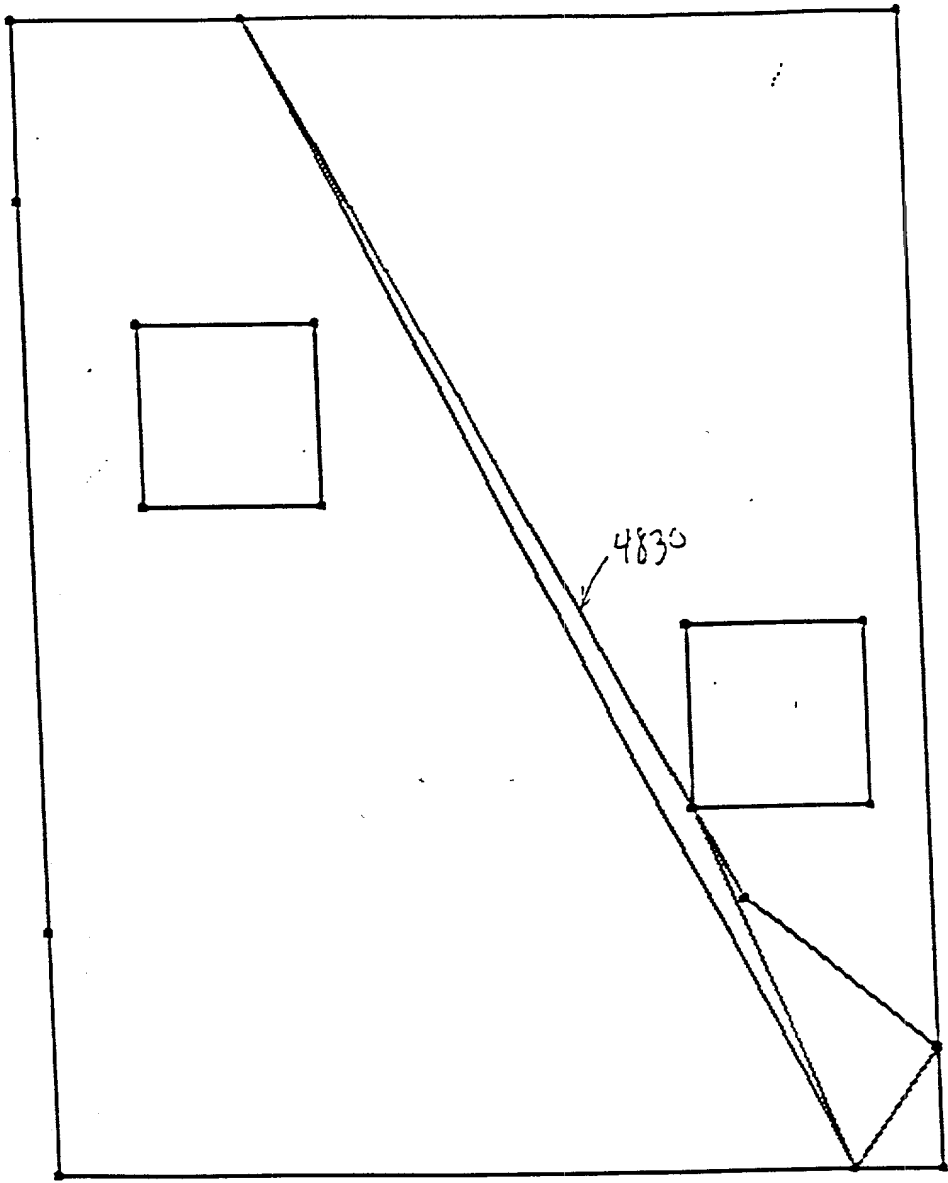


FIGURE 48D

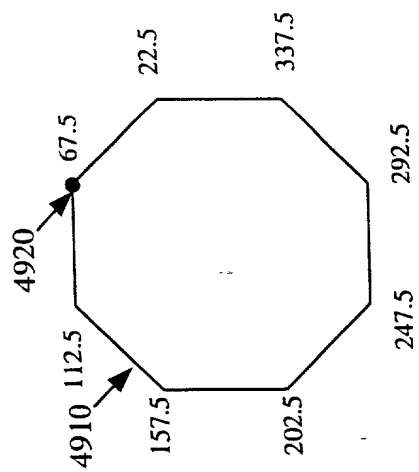


Figure 49A

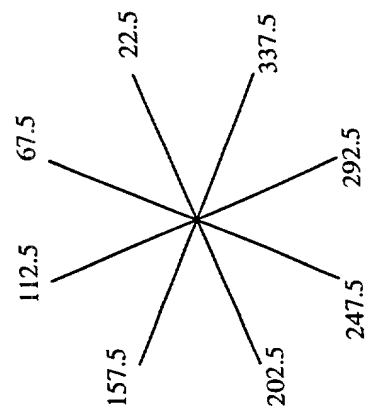


Figure 49C

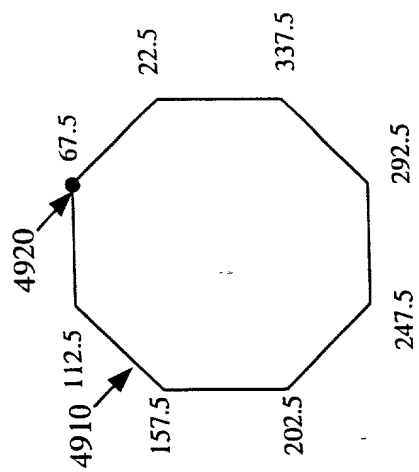


Figure 49B

20250601 0310

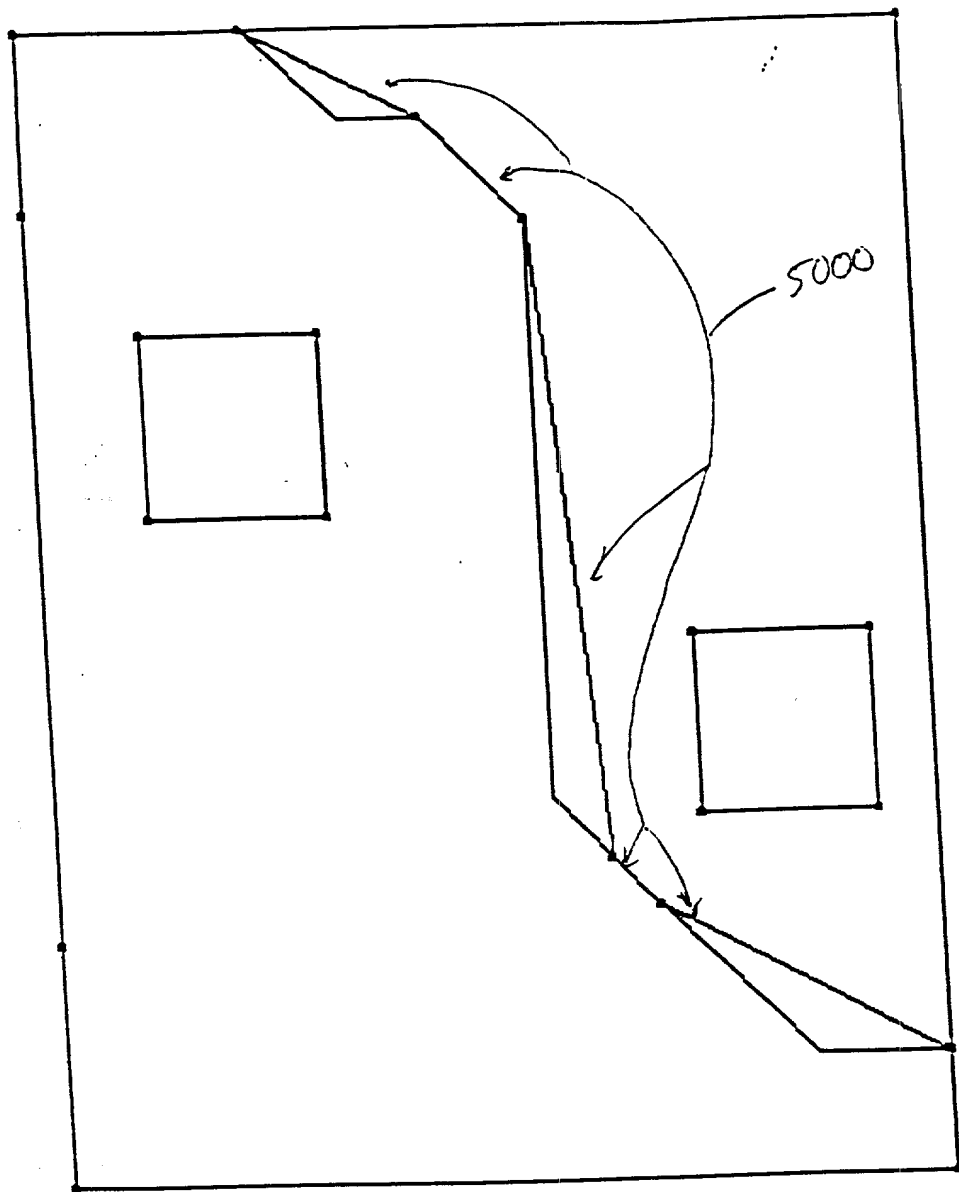


FIGURE 50

2016-09-09 09:00

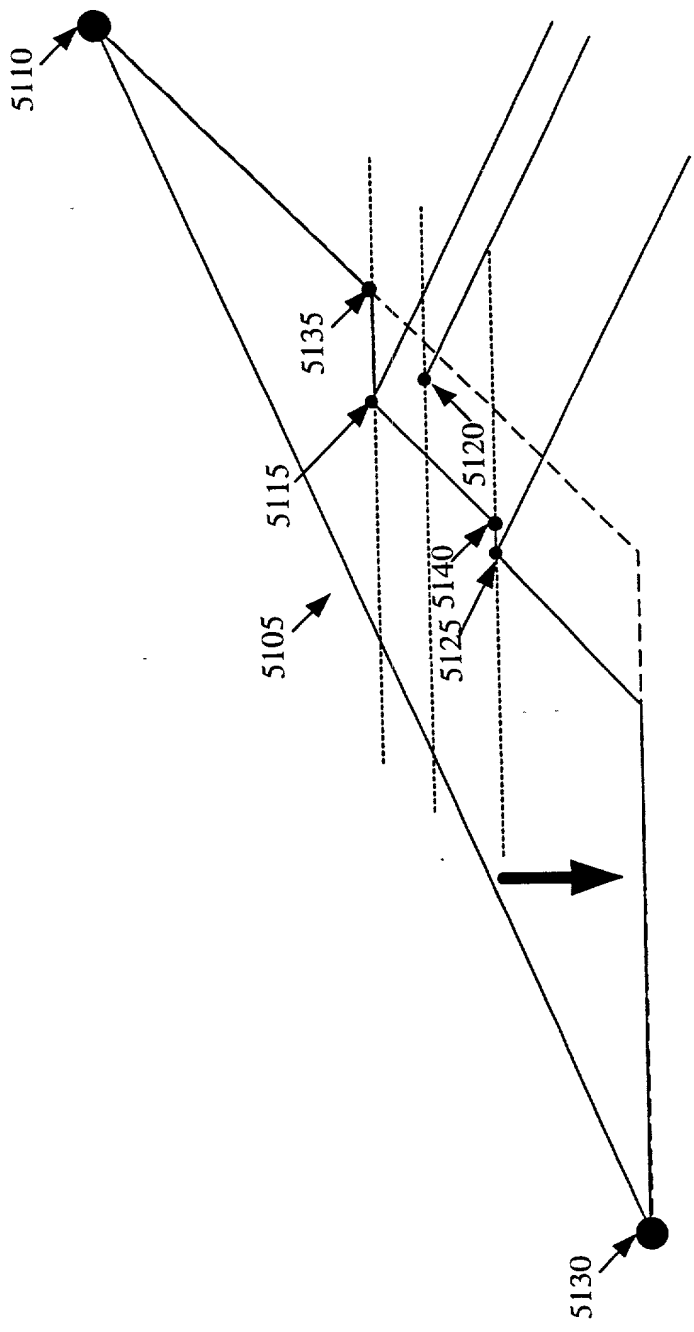


Figure 51

10056060.03102

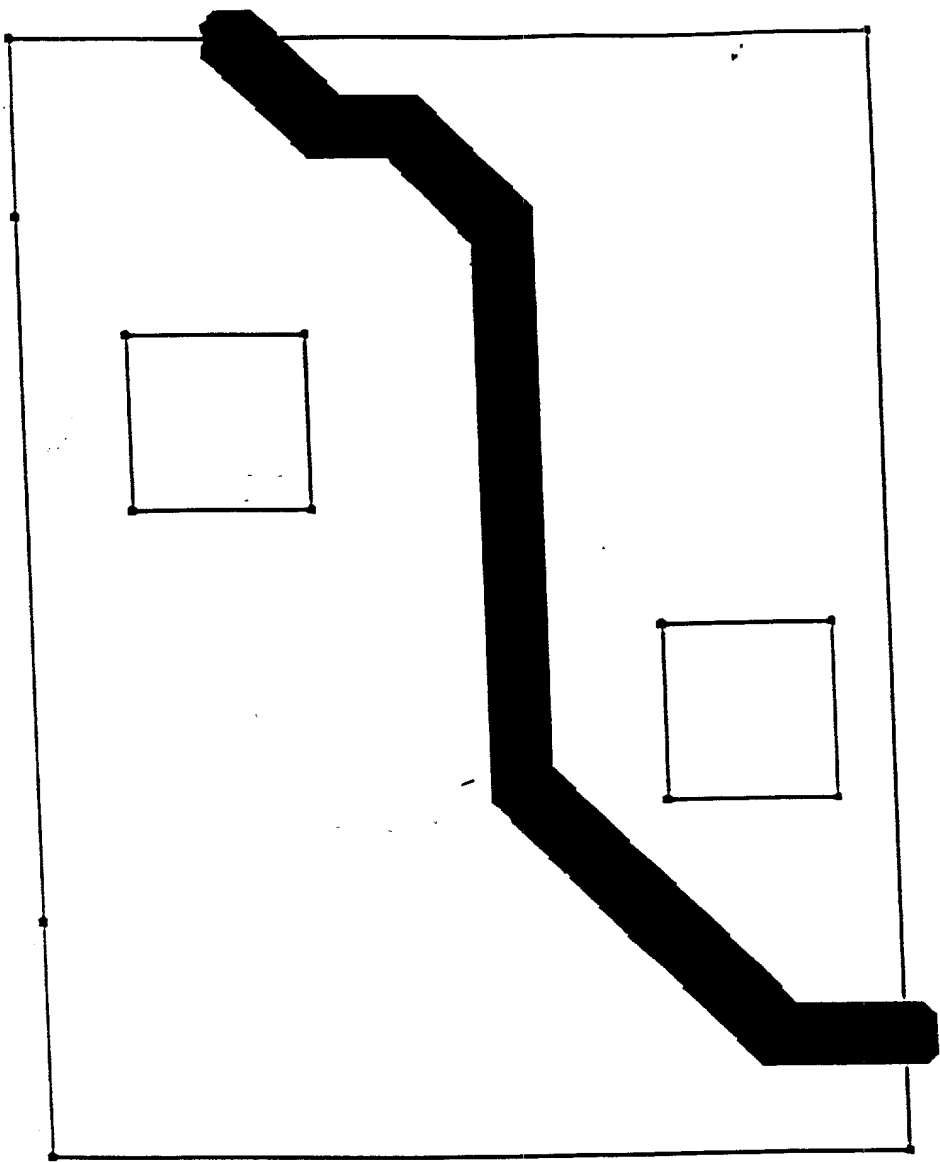
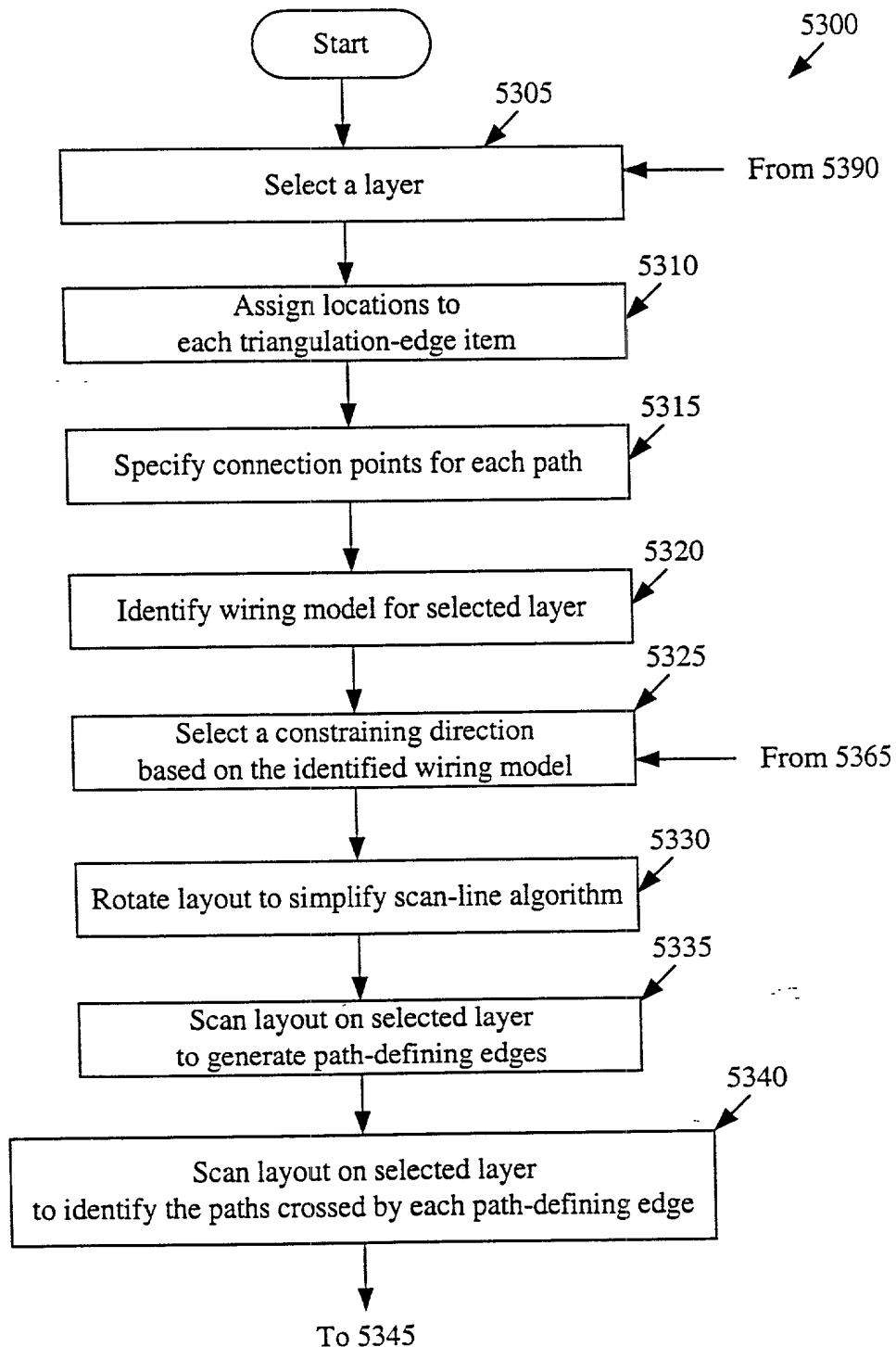
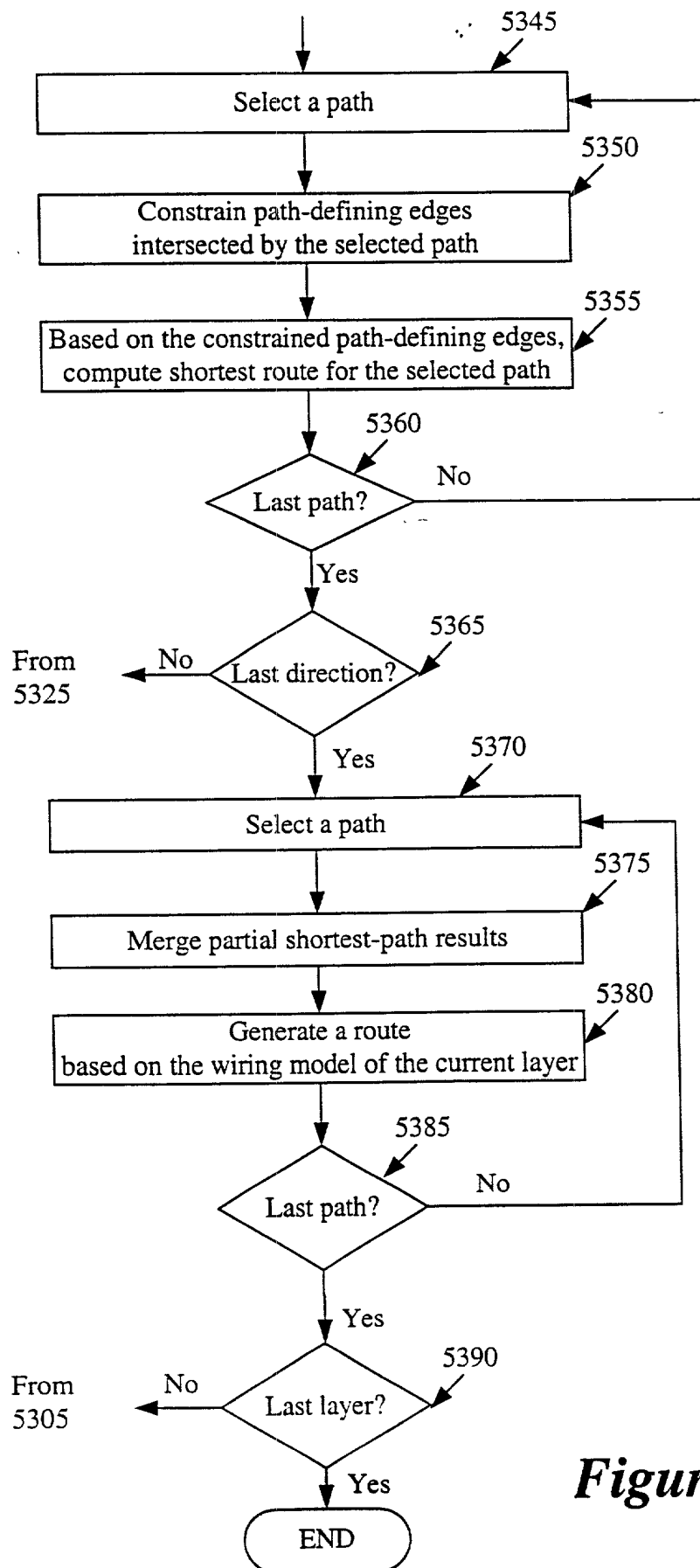


FIGURE 52



**Figure 53**

**Figure 53:** Figure 53A  
Figure 53B



**Figure 53B**



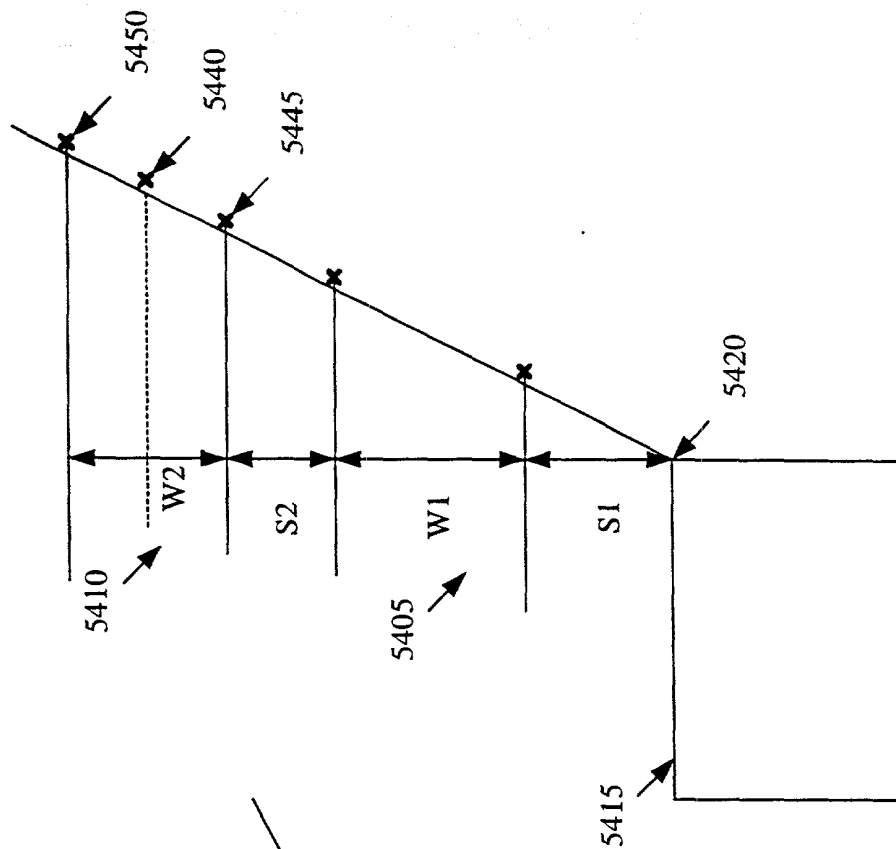


Figure 55

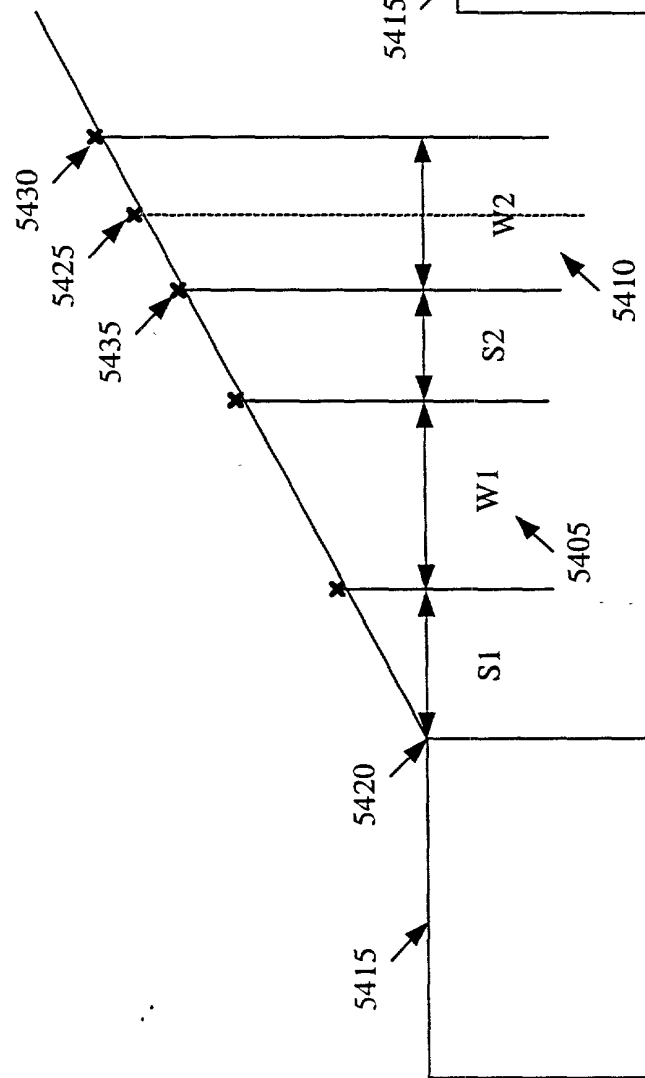
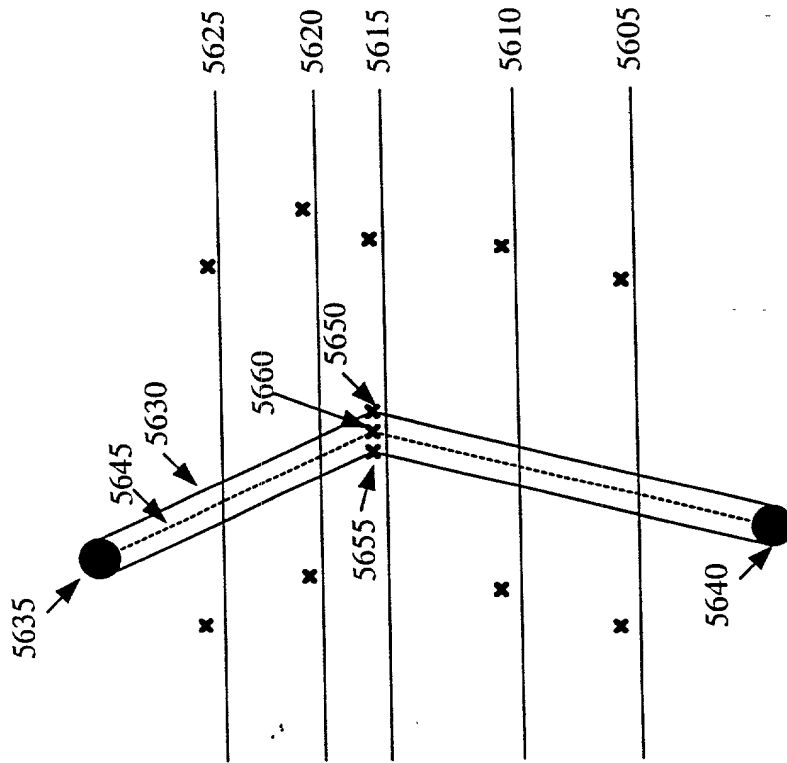
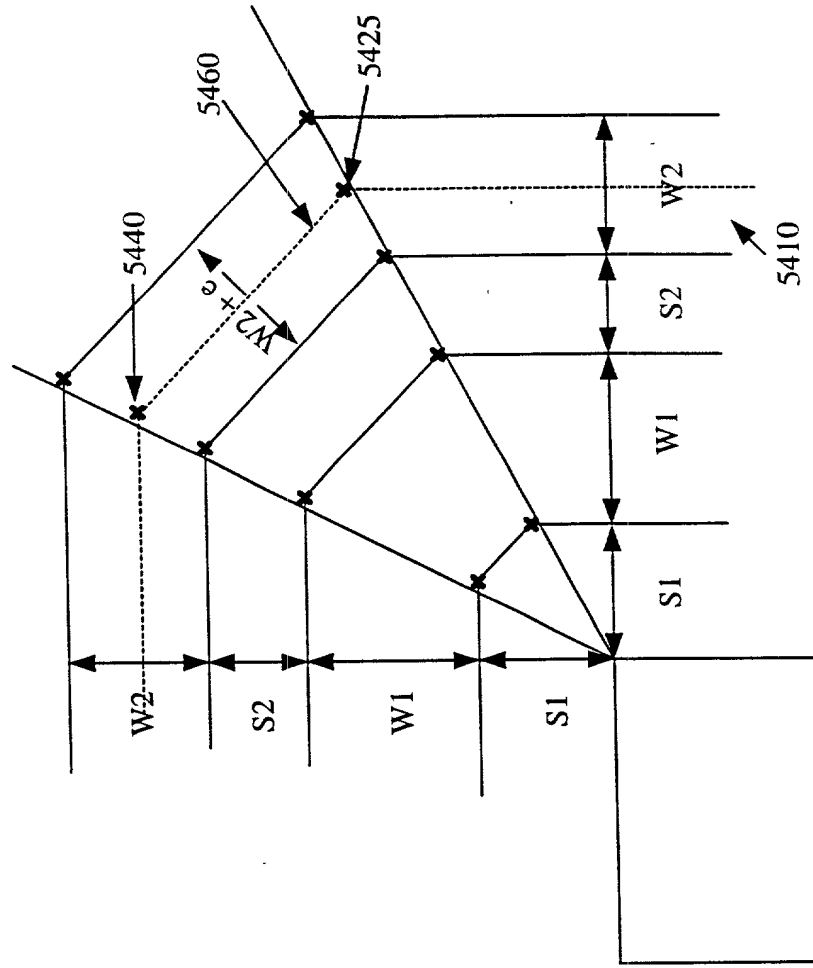


Figure 54

[illegible]

**Figure 56**



**Figure 57**

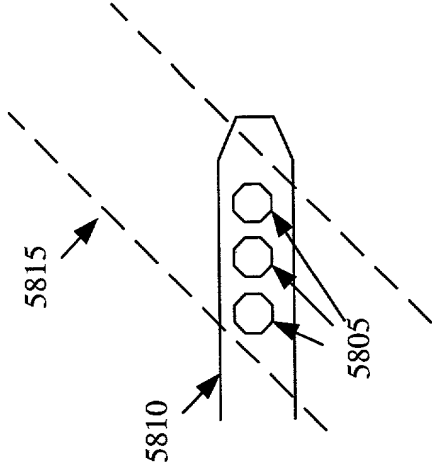


Figure 58

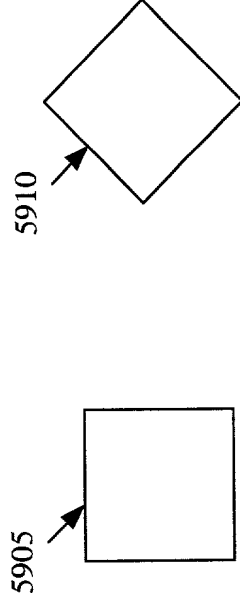


Figure 59

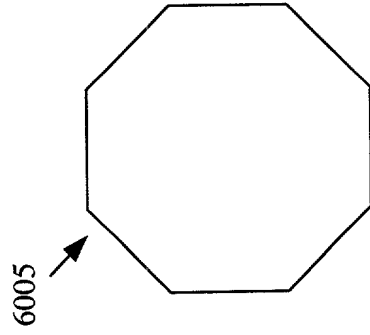


Figure 60

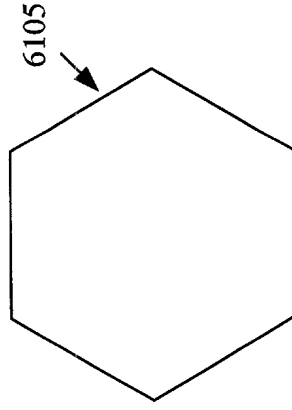


Figure 61

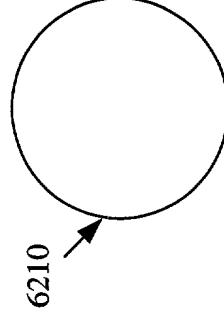


Figure 62

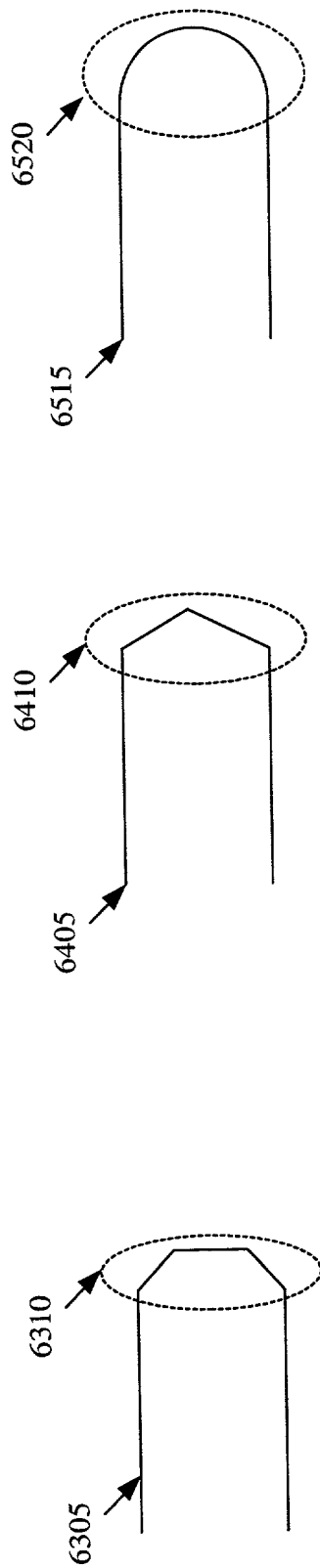


Figure 63

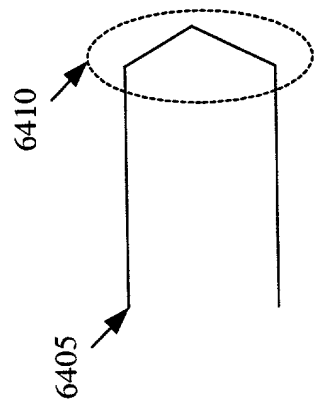


Figure 64

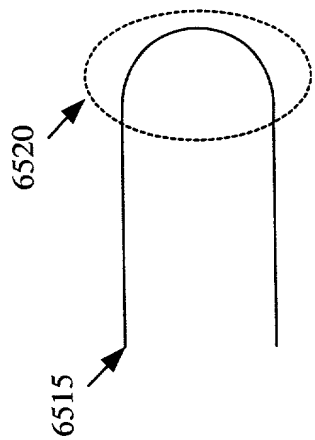
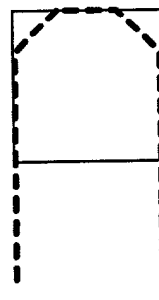
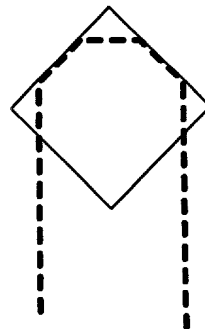


Figure 65

(1)



(2)



(3)

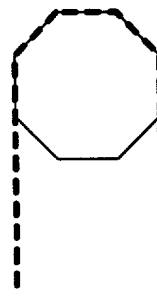
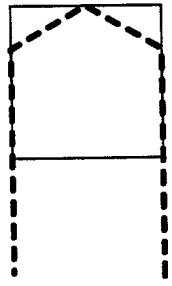


Figure 66

(1)



(2)

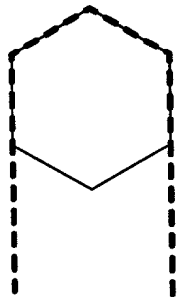


Figure 67

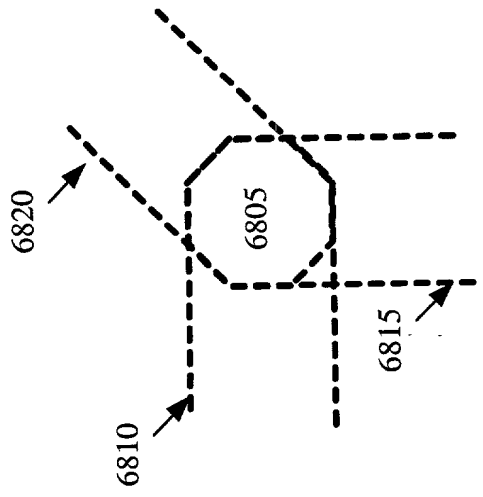


Figure 68

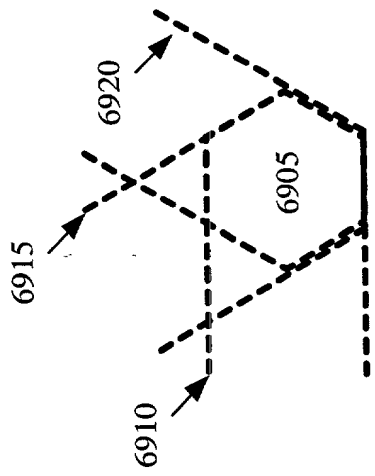
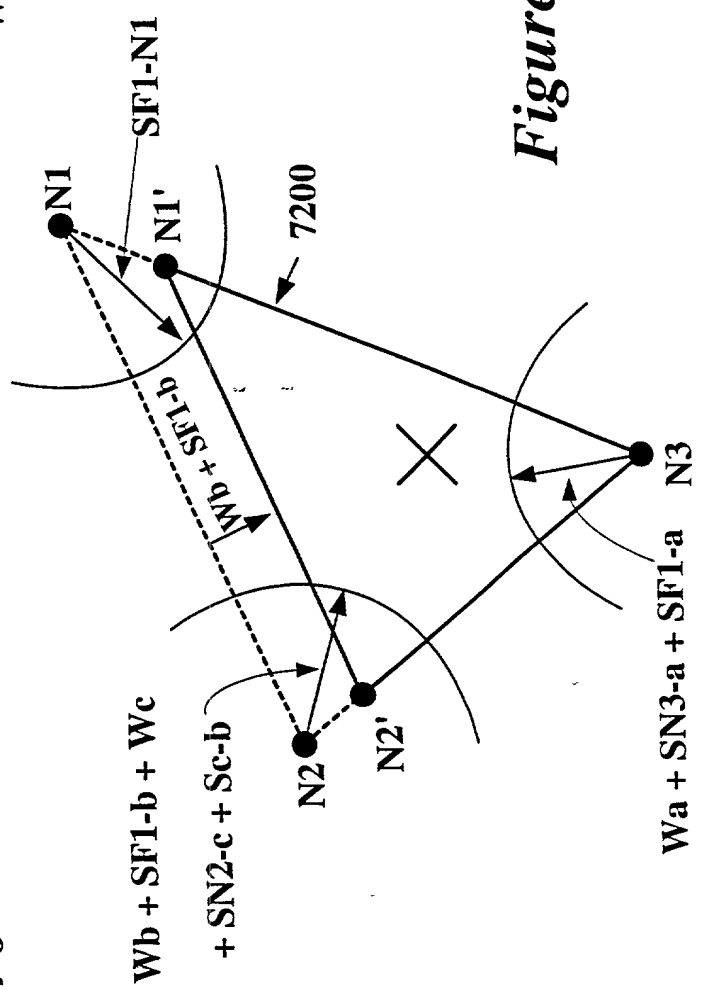
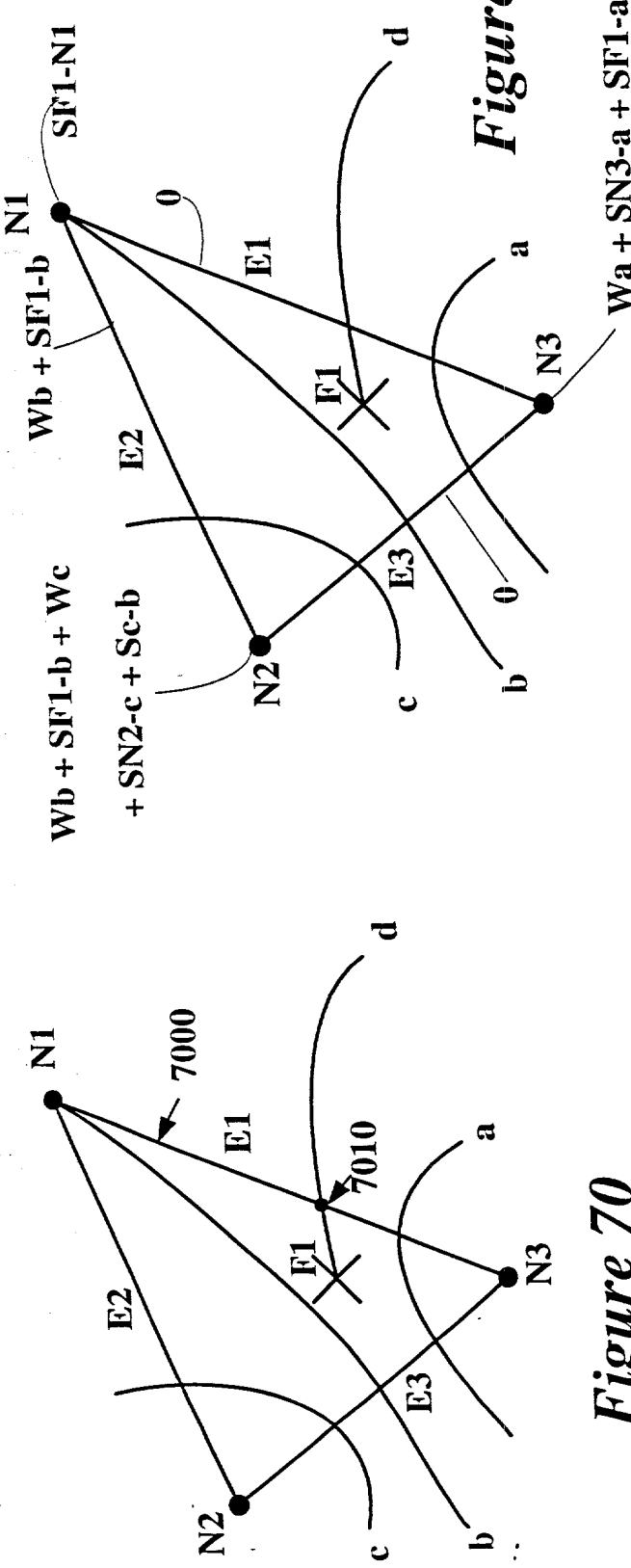


Figure 69

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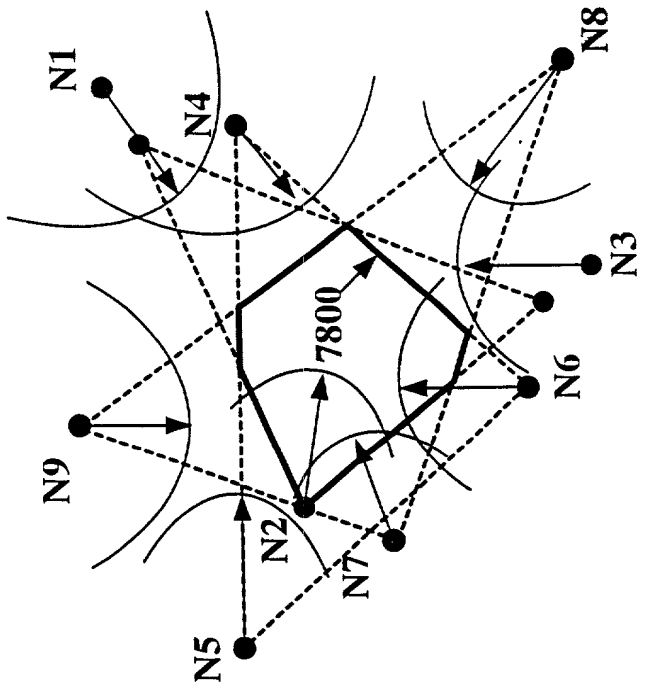


Figure 78

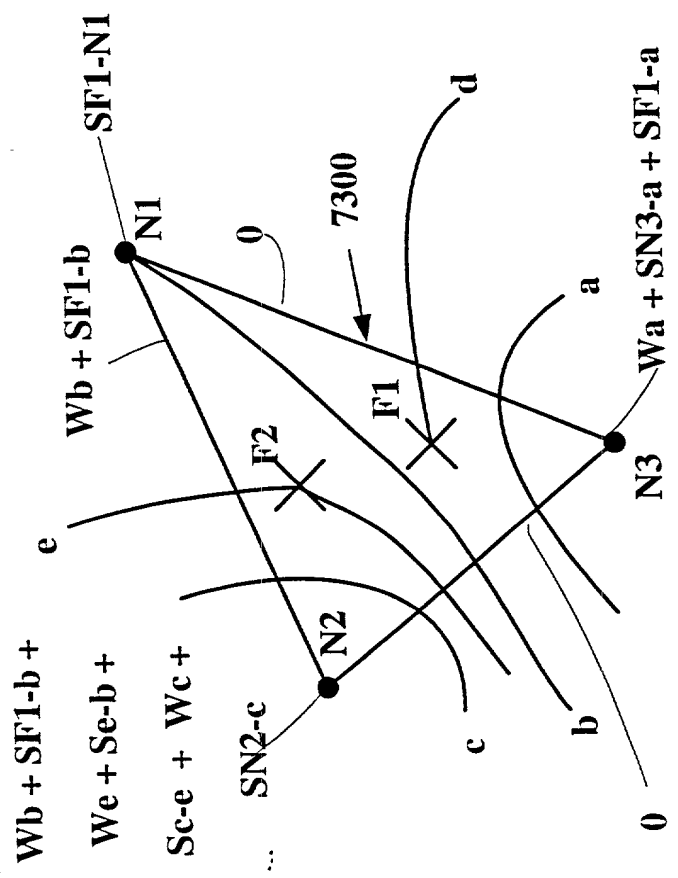


Figure 76



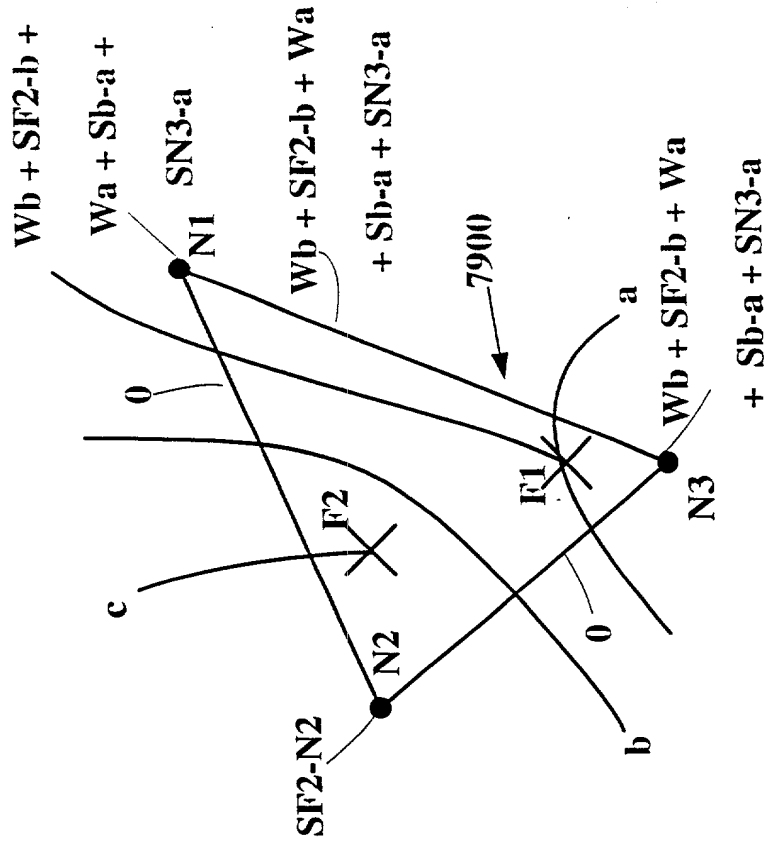


Figure 79

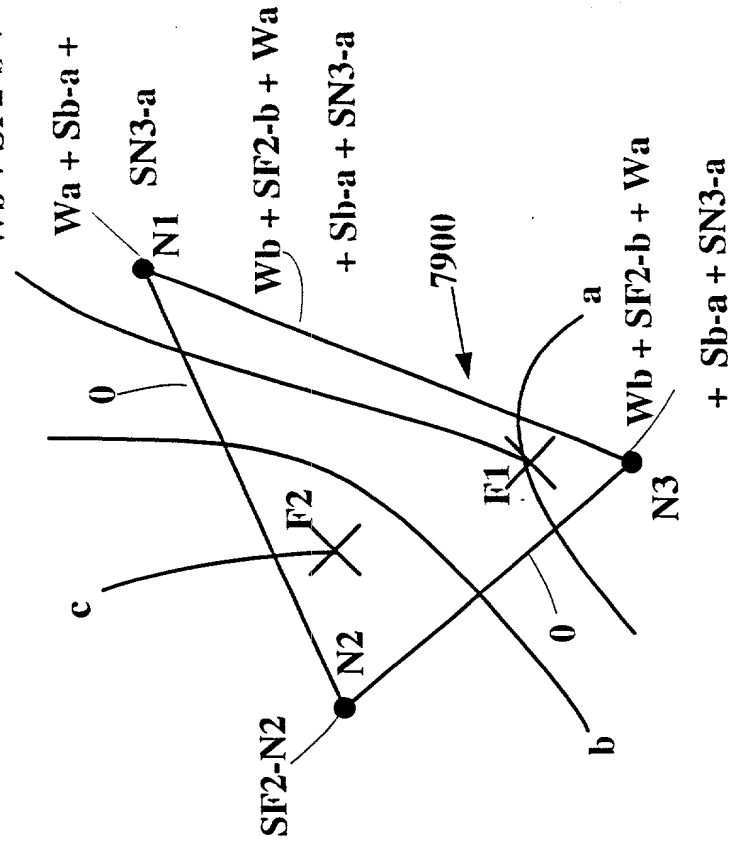


Figure 80

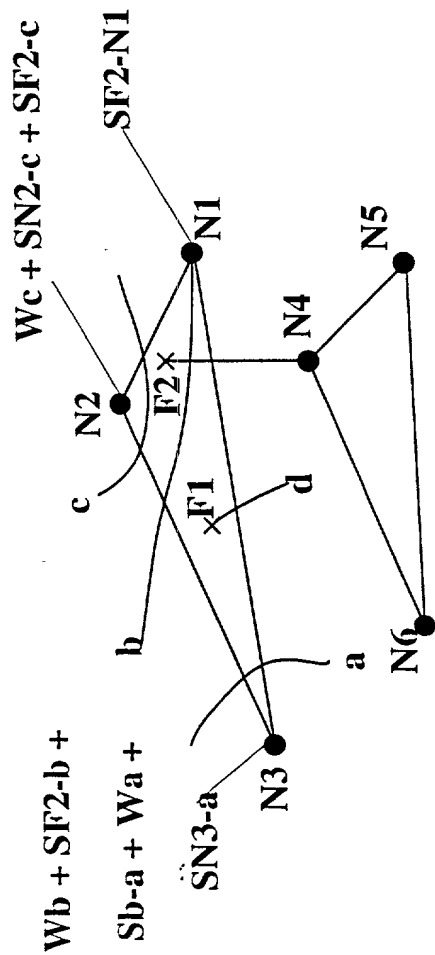


Figure 81

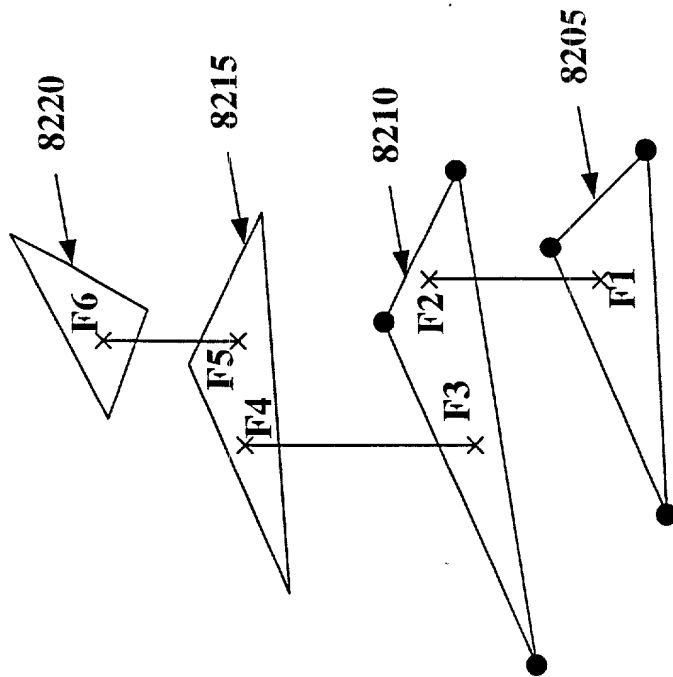


Figure 82

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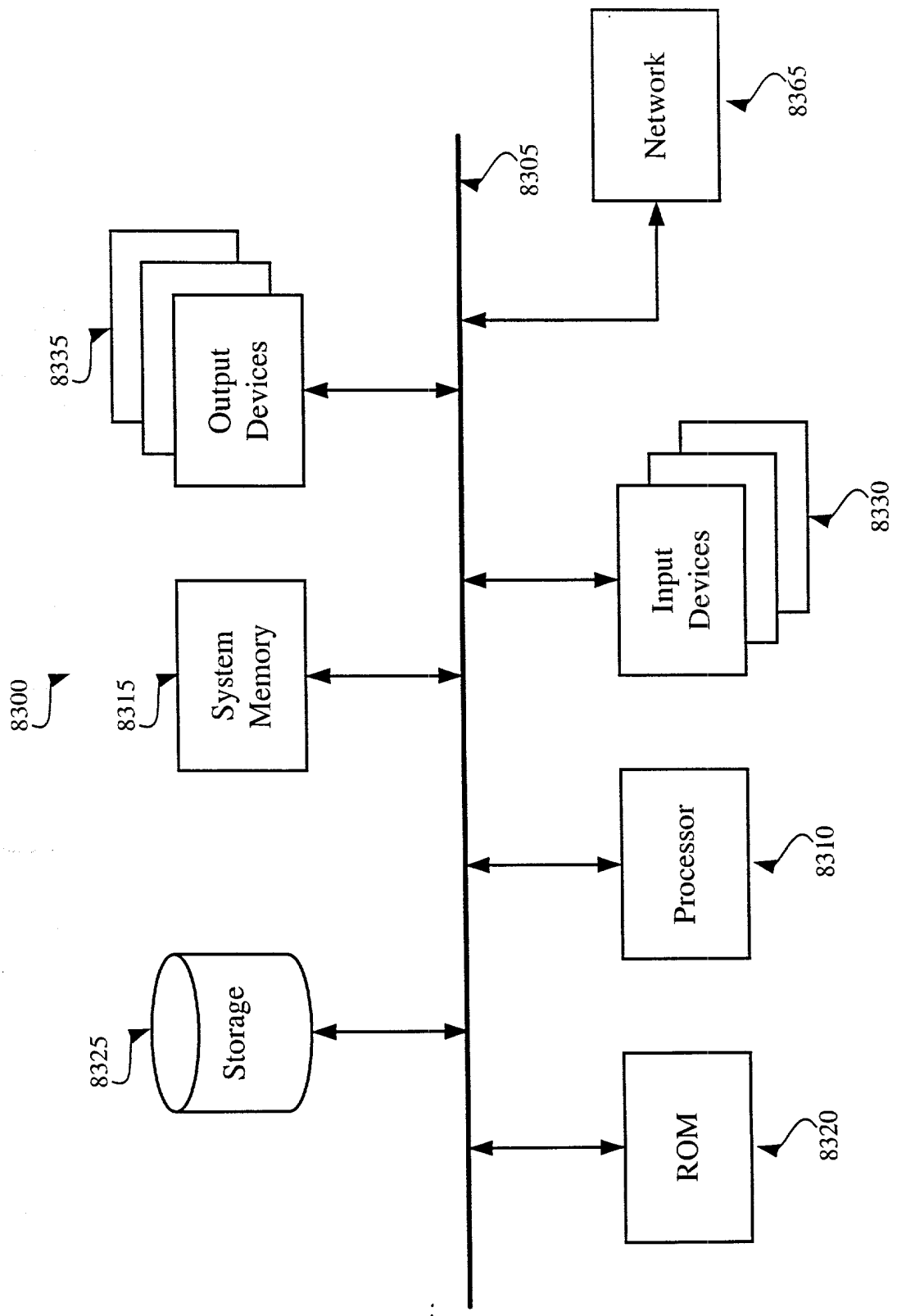


Figure 83